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CYBELE BRITANNICA;

OR

BRITISH PLANTS

AND THEIR

GEOGRAPHICAL RELATIONS.

54626

BY

HEWETT COTTRELL WATSON.

VOL. II.

DISTRIBUTION OF SPECIES.

(*Continued.*)

39. LORANTHACEÆ.—80. ALISMACEÆ.

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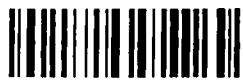
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Postscript.

The Orders which still remain to be treated in the third volume, are the two heterogeneous assemblages of Fluviales and Araceæ, as these stand in the 'London Catalogue of British Plants,' together with Restiaceæ, Juncaceæ, Cyperaceæ, Gramina, Filices, and Pteridioides; the last mixed group including Lycopodium, Isoetes, Pilularia, and Equisetum. Taken together, these orders include upwards of three hundred species, that is, rather less than half the number treated in the present volume.

EXPLANATIONS

INTRODUCTORY TO THE SECOND VOLUME OF

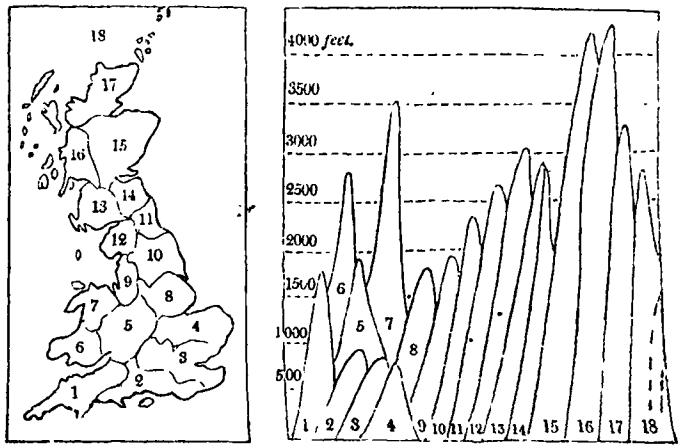
CYBELE BRITANNICA.

THE SECOND volume of the Cybele Britannica seems to require no particular explanation, since it is simply a continuation of the former volume, carrying forward the distribution of individual species through the remaining orders of Dicotyledonous plants, with a portion of the Monocotyledones. Those of the latter which may still remain untreated of, after completion of this second volume of the work, together with the Filices and allied orders, will form the earlier portion of the third volume. It is anticipated that the remainder of volume third will be required for supplementary and corrective additions to the two earlier volumes, likely to be supplied from the present rapidly accumulating stores of information on the subject of local botany in England.

The Author feels anxious to complete these three volumes, including all the phænogamous plants and ferns; because they will thus comprise a full collection of arranged data, ready for the use of any other botanical geographer, either in prosecuting similar researches, or in carrying them onward to more general views. And in order to render the three volumes as complete and useful as the plan of them may admit, in the light of a condensed arrangement

of facts, it is earnestly recommended that competent botanists will either make public through the periodicals, or communicate to the Author, any information which may tend to fill up deficiencies, to remedy defects, or to correct errors in either of the two earlier volumes. The third volume, in which any such corrections &c. can be made, will probably be prepared for the press in 1850 or 1851.

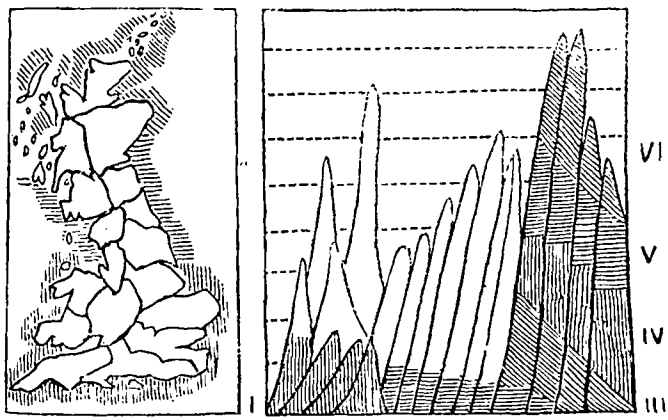
With a view to save readers the trouble of back reference to the former volume, while using this present one, it has been deemed desirable to repeat the smaller diagram and map, which were designed to show the geographical position and comparative elevation of the "Provinces," or groups of counties, indicated by the numeral figures in the line which exhibits the "Area" of each species.



Provinces. Altitude of Provinces.

1. Peninsula.
2. Channel.
3. Thames.
4. Ouse.
5. Severn.
6. S. Wales.
7. N. Wales.
8. Trent.
9. Mersey.
10. Humber.
11. Tyne.
12. Lakes.
13. W. Lowlands.
14. E. Lowlands.
15. E. Highlands.
16. W. Highlands.
17. N. Highlands.
18. N. Isles.

A similar reason will suggest likewise a repetition of the cut which was introduced in illustration of the "Zones," or ascending stages of vegetation.



Ascending Zones of Vegetation.—See vol. i. p. 41.

I. Inferagrarian zone.
Midagrarian zone.
III. Superagrarian zone.
IV. Inferarctic zone.
V. Midarctic zone.
VI. Superarctic zone.

The present opportunity may be taken also to correct a slight error which occurs in several places in the first volume. On page 62 of that volume it was mentioned that 46° (Fahr.) was assumed as the mean annual temperature of the north coast of Scotland, in estimating that under which the several species had been observed to grow wild in Britain. But, by a table given in Edmondston's Flora of Shetland, it appeared that still the same mean annual temperature prevails in Orkney; while the mean of the monthly means at Unst, in Shetland, from August, 1841, to July, 1842 (a year of high temperature), was even at 48½ degrees of Fahrenheit's scale; the winter months being much milder, although the summer months were cooler,

in Shetland than in Orkney. And under these circumstances, it appeared that at least the same mean of 46° must still be indicated for species which occur at or near the coast level in Shetland.

But it has been since suggested by Mons. C. Martin, and apparently with truth, that the thermometrical registry used by Mr. Edmondston in his tables, was taken from an instrument placed *inside a room*, although one without fire; and that it is consequently too high. (See Voyages en Scandinavie, &c.) Mr. Martin prefers to substitute the thermometrical observations made in the same island of Unst, in 1824 and 1825, by Mr. William Scott, corrected for time according to the scale deduced from observations at Edinburgh, by Mr. Adie. He thus reduces the mean annual temperature of Unst, situate at the northern extremity of the Shetland group, to a fraction below 45°;—say 45° for the group generally.

The necessary correction will be made in the former volume of the Cybele, by indicating that degree of temperature for any species which grows in Shetland, and is not known to occur at such an elevation there, or elsewhere in Britain, as would imply a mean temperature below 45° Fahr. The following species are thus circumstanced:—Cakile maritima, Cochlearia officinalis, Cochlearia danica, Sagina maritima, Arenaria marina, Cerastium semidecandrum, Cerastium nigrescens, Hypericum perforatum, Lathyrus maritimus, Hippuris vulgaris, Eryngium maritimum, Ligusticum scoticum, Daucus Carota, Anthriscus vulgaris;—for each of which the figure must be reduced from 46 to 45.

DISTRIBUTION OF SPECIES.

(CONTINUED.)

503. VISCUM ALBUM, *Linn.*

Area 1 2 3 4 5 * 7 8 (9) 10 (11 * * * 15).
South limit in Devon, Dorset, Sussex, Kent.
North limit in Yorkshire, Denbighshire, Durham ?
Estimate of provinces 10. Estimate of counties 30.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—48.

Native. Sylvestral (parasitic). To many of its recorded localities the Mistletoe has doubtless been introduced as an object of curiosity with cultivators of plants. The late Mr. J. E. Bowman included it in his list of plants near Wrexham; and there are various authorities for its occur rence in Nottinghamshire, Derbyshire, and Yorkshire. The Flora of Liverpool is my only authority for the province of Mersey, and the two localities, there indicated, read rather suspiciously. Of the four localities recorded in the Flora of Northumberland and Durham, two are expressly stated to be garden-introductions; a third is given on imperfect memory; while the fourth, on authority of the Rev. Mr. Coates, is mentioned without comment. More northward we find the two recorded localities of "woods of Mickleour, Scotland" (Hook. Flo. Scot.), and "woods of

Belmont" (Gard. Flo. Forf.), in regard to which it appears better to wait further information before receiving them as native habitats. I do not know in what county or province the locality of Mickleour is to be placed.

504. SAMBUCUS NIGRA, *Linn.*

Area general?
South limit in Cornwall, Isle of Wight, Kent.
North limit in Argyle, Fife;—or Orkney, Caithness.
Estimate of provinces 16 (18). Est. of counties 60 (75).
Latitude 50—56 (60). British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends (introduced?) to 250 yards, in E. Highlands.
Range of mean annual temperature 52—47 (45).

Native. (Denizen in North Scotland.) Sylvestral and Septal. Frequent through the greater part of Britain, although its present northern limit may have been carried to a higher latitude by human aid. In the unpublished Flora of Orkney, by Dr. Gillies, the Elder is stated to occur "on rills in Hoy;" and Lowe's list, in Barry's History, is cited as the authority for this statement. The name of Sambucus nigra is included in a list of plants observed near Reay, on the north coast of Caithness, by myself, in 1832; but I do not now recollect the circumstances under which it was observed. The Rev. G. Gordon enumerates it among the plants of Ross-shire, and also as being frequent in Moray; but he expressly intimates his opinion that the Elder had been originally introduced into the North of Scotland. Mr. Stables also mentions it in the Alvah Catalogue (Banffshire) as frequent but introduced. In the Flora Abredonensis, it is stated to be frequent in the vicinity of

Aberdeen, without any qualification on the score of nativity being added. In Gardiner's Flora of Forfarshire we find this remark, "occurs frequently, though chiefly about the habitations of man, and probably not indigenous." Southward from the preceding, the Elder occurs in nearly every county, and is likely a true native in most of them. Under such circumstances, it is somewhat of a puzzle to a botanical geographer, whether he should take the actual northern limit, or guess at the indigenous limit, in drawing up the formula for illustrating the distribution of the species. The Elder grows at Killin, Perthshire, 150 yards of elevation; also at Kirkton, in Glen Clova, Forfarshire, 250—300 yards; in all likelihood, introduced to both places. As a strictly indigenous species, it may not rise above the mid-agrarian zone.

505. SAMBUCUS EBULUS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 * 17.
South limit in Devon, Isle of Wight, Kent.
North limit in Ross, Banff, Forfar, Glasgow.
Estimate of provinces 17. Estimate of counties 50 or 60.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards in England.
Range of mean annual temperature 52—46.

Denizen. Septal, Viatical, &c. "I believe the Danewort to be a genuine native, but like Cynoglossum officinale, Atropa Belladonna, and some other plants, partial to soils containing nitrate of potash," writes Dr. Bromfield, "thus accounting for its frequent appearance about churchyards, ruins, and similar places where that salt abounds,

without supposing it to have been originally introduced by man's agency." (Phytol. iii. 415.) By the authors of our general floras and lists, the Sambucus Ebulus is allowed to pass muster with the true natives; while some authors on local botany deny its local nativity. I have seen it only in few and suspected places. The Rev. G. Gordon says, "introduced into the north of Scotland, at a very remote period."

506. VIBURNUM OPULUS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Ross, Aberdeen, Argyle.
Estimate of provinces 17. Estimate of counties 75.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 250 yards, in East Highlands.
Range of mean annual temperature 51—44.
Native. Sylvestral, &c. Less frequent in Scotland than in England, yet found in the former in many places. I observed it near Killin, at 150 yards; and the Rev. A. Rutherford sent specimens to the Botanical Society of London, from Kingussie, in Moray, which is stated (Rep. Brit. Assoc.) to be 250 yards above the sea.

507. VIBURNUM LANTANA, *Linn.*

Area 1 2 3 4 5 6 * 8 * (10 * * 13 14 15).
South limit in Devon, Isle of Wight, Kent.
North limit in York? Notts, Hereford, Pembroke.

Estimate of provinces 7. Estimate of counties 25.
Latitude 50—54. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 feet, in England.
Range of mean annual temperature 51—48.

Native. Sylvestral, Septal, &c. The Scottish localities on record for this species, which would extend its range three degrees more northerly in latitude, and bring down its temperature to 46, are too suspicious for reliance as indigenous habitats. Though the name occurs in the Flora of Yorkshire, it is without the citation of locality or authority for the plant.

508. LONICERA PERICLYMENUM, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 600 yards, in Tyne province (Bowman).
Range of mean annual temperature 52—42.

Native. Septal, Sylvestral. Ascending "probably to 1800 feet, on Falcon Clints, in Teesdale," Durham, according to Mr. R. B. Bowman; attaining 1500 feet, in Aberdeenshire, by Dr. Dickie's observations; seen by myself at nearly 800 feet in the north of Sutherland, and over 1000 feet on the south side of the Grampians.

509. LONICERA CAPRIFOLIUM, *Linn.*

Area (1 2 3 4 5 * 7 * 9 10 * * 13 14).

Alien? Localities are recorded for this species in some sixteen counties; that of Cambridge being the only one which gives occasion to a doubt whether the designation of "alien" be strictly correct. Professor Henslow marks the name in his Catalogue, as that of a species possibly introduced, but not certainly so, in Cambridgeshire; and in the Manual of British Botany, Mr. Babington applies the same mark. In a manuscript note, recently received from the Author of the Manual, he observes, "Lonicera Caprifolium is, I think, a native of this [Ouse] district. It is found in many old thickets, at some miles distance from each other, in Cambridgeshire." On the other hand, Dr. Bromfield thinks that "geographical considerations are opposed to the idea of the species being truly indigenous to this country, though decidedly a well-naturalized plant in several parts of the kingdom." (Phytol. iii. 421.)

510. LONICERA XYLOSTEUM, *Linn.*

Area * 2 (3 * 5 6 * * 9 10 11 12 * 14 15).

South and North limits in Sussex.

Estimate of provinces 1. Estimate of counties 1.

Lat. 50—51. Local (Germanic) type of distribution.

Agrarian region. Inferagrarian zone.

Descends —— ? Ascends —— ? (Altitude trifling.)

Range of mean annual temperature about 50.

Native? Sylvestral. In the British Flora, this is marked as having been "naturalized by the agency of man." In

Henslow's Catalogue, it is given as "possibly introduced by the agency of man." Mr. Borrer, Mr. Babington, Dr. Bromfield, each deem it "truly wild" in Sussex. But a species may be truly wild at the present day, and yet have been introduced by human agency originally; though I suppose that we are to understand the opinions of the three botanists above named, as implying a conviction in favour of the shrub being truly native; and in reliance on their opinions, the formula has been drawn up accordingly. As an introduced species, it occurs under a temperature of 47 or 46 degrees. Possibly wild in Hertfordshire; for which, see Flora Hertfordiensis, page 133.

511. LINNÆA BOREALIS, *Gronov.*

Area * * * * * * * * * * 11 * * 14 15 * 17.
South limit in Northumberland or Berwickshire.
North limit in Ross, Moray, Banff, Aberdeen.
Estimate of provinces 4. Estimate of counties 10.
Latitude 55—58. Scottish type of distribution.
A. A. regions. Midagrarian—Midarctic zones.
Descends to a moderate altitude, say 100 yards.
Ascends to 800 or 850 yards, in East Highlands.
Range of mean annual temperature 46—38.

Native. Sylvestral. This little plant, so much a favorite with botanists, has been found in the counties of Northumberland, Berwick, Edinburgh, Perth, Forfar, Kincardine, Aberdeen, Banff, Moray, and Ross, and to these ten, perhaps, it might not have been deemed too hasty to make an addition, by setting down the estimate at 12. Apparently absent from the western side of Scotland; and unknown in England, except for the single locality "in a plantation of Scotch Firs, at Catcherside, in the parish of Hartburn"

(Miss Emma Trevelyan, in Hook. Brit. Flo.); on the genuine nativity of which a doubt has been thrown, because the trees are said to have been brought from Norway: was this the fact?

512. RUBIA PEREGRINA, *Linn.*

Area 1 2 3 [4] 5 6 7 * * * * [12 * * * 16].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Anglesea, Caernarvon, Hereford.
Estimate of provinces 6. Estimate of counties 20.
Latitude 50—54. Atlantic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to 50 or 100 yards, in the same province.
Range of mean annual temperature 52—49.

Native. Rupestral and Sylvestral. In addition to the half dozen counties above mentioned, the Rubia is recorded to grow in those of Devon, Somerset, Dorset, Wilts, Sussex, Gloucester, Monmouth, Glamorgan, Pembroke, Cardigan, and likewise Cambridge; but in respect to the latter county there would appear to have been some mistake, since the plant is not found by the Cambridgeshire botanists of the present day. For the province of the Lakes, there is no better authority than the statement of a former local guide, utterly untrustworthy. And the West-Highland province, originally indicated for this species by Dr. Mitchell (Linn. Corresp.—Eng. Flo.), was undoubtedly an error. It is not very likely that the Rubia will be found in 20 counties; but being known already in 16, the next step in the descending estimate (15) would probably be as much too low as 20 may be above the actual number.

513. GALIUM VERUM, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 600 yards, in East Highlands.
Range of mean annual temperature 52—41.
Native. Pascual and Glareal. Frequent through the Agrarian region, but infrequent above the limit of cultivation. I observed it in several places about Castletown, Aberdeenshire, from 1400 to 1700 feet of elevation, and Dr. Dickie mentions 1800 feet in the same neighbourhood; so that it would appear slightly to exceed the upper limit of cultivated ground.

514. GALIUM CRUCIATUM, *With.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 * * 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Hebrides, Moray? Aberdeen?
Estimate of provinces 17. Estimate of counties 75.
Latitude 50—59. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—46.
Native. Sylvestral. If an 'Account of the Vegetation

of the Outer Hebrides' had not been published, it is probable that the present species might have been here assigned to the English type of distribution, or to the British type passing into the English. And yet the information given by Balfour and Babington, in the publication referred to, would suggest the idea of the plant being more correctly assigned to the British type, slightly shading off towards the Atlantic. Although not among the most common, it is decidedly a frequent species in England; and it is marked as being of the highest degree of frequency, "very common," in the Edinburgh Catalogue. In the low grounds between the Firth of Forth and the line of the Grampian Mountains several localities are known to produce the species, and some of them plentifully. Northward from Forfarshire it would appear to be very rare; and the Rev. G. Gordon doubts whether it be truly indigenous in the single locality mentioned in the 'Collectanea for a Flora of Moray.' On the western side of Scotland, I am not aware of any recorded locality between the river Clyde and the Hebrides; where, however, it is stated to occur in North Uist, Harris, and Lewis; so that its existence in the intermediate province of the West-Highlands seems highly probable, and induces an addition of one to the estimated number of provinces.

515. GALIUM PALUSTRE, *Linn.*
515, b. GALIUM WITHERINGII, *Sm.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 500 yards, in East Highlands (Dickie).
Range of mean annual temperature 52—42.

Native. Paludal. I have not met with this common species above 1100 feet in the Highlands; but Dr. Dickie reports it at 1500. The G. Witheringii seems hardly deserving of a distinctive name as a mere variety: it probably may be found in every province; being recorded in Shetland and the Isle of Wight, with numerous intermediate counties. But Professor Henslow and other botanists have regarded Withering's plant as a form of G. uliginosum.

516. GALIUM ULIGINOSUM, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 * [17] 18.
South limit in Devon, Isle of Wight, Kent.
North limit in Shetland, Orkney, —— ?
Estimate of provinces 16. Estimate of counties 70.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—45.

Native. Paludal. It appears probable that the present species is frequently confused with G. palustre, and sometimes with G. pusillum; and in this case its actual distribution, both provincial and comital, may be more nearly general than is indicated above, especially when we observe that the three provinces left blank, or excluded, are precisely those for which we have still only incomplete lists of species. According to Fries, G. uliginosum is distributed throughout Scandinavia; and the name occurs in the list

of Faroe plants, where that of G. palustre is wanting. On the other hand, the London Catalogue shows that G. uliginosum is absent from three out of twenty local Floras in Britain: it is noted as "rather rare" in the Edinburgh circuit; local in Moray; unnoticed by Babington and Balfour in the Hebrides; and I fear that the G. uliginosum recorded from Sutherland (Outlines Geogr. Distr.) was G. palustre, but I do not possess a specimen from that county.

517. GALIUM SAXATILE, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Superarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 1250 yards, in West Highlands.
Range of mean annual temperature 52—34.
Native. Ericetal. One of the most universally distributed species in Britain, except that it has been banished from large tracts by the farmer and gardener.

519. GALIUM MOLLUGO, *Linn.*
518. GALIUM ERECTUM, *Aut. Angl.*
&c. &c.

Area 1 2 3 4 5 6 * 8 * 10 11 12 13 14 15.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Banff, Aberdeen.
Estimate of provinces 15. Estimate of counties 50.

Latitude 50—58. English (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 300 or 400 yards, in Yorkshire (Leefe).
Range of mean annual temperature 52—45.

Native. Septal and Sylvestral. This species belongs to the English type, except through some outlying localities in the East-Highland province, which approximate its distribution to the more general or British type. It is recorded from Lanark, West of Perthshire, and Moray; with some few other localities in Scotland, to the eastward of these; but westward and northward therefrom, it is not yet known to occur anywhere in North Britain. Along with Galium Mollugo and erectum, I include the G. scabrum, insubricum, aristatum, and cinereum, at least of English authors; never having seen a British specimen, labelled under any of those names, which appeared to me distinct from G. Mollugo. But if G. erectum be really a distinct species, I fear that its recorded localities cannot be distinguished from those of G. Mollugo. I have not seen G. Mollugo higher than 100 or 200 yards; but the Rev. J. E. Leefe informs me that it occurs on the "summit of Hambledon Hills," which exceed 1200 feet.

520. GALIUM PUSILLUM, *Linn.*

Area * * [3] 4 5 * 7 8 9 10 * 12 * 14 15.
South limit in Stafford, Derby, Bedford?
North limit in Forfar, Fife (Ochills), Stirling.
Estimate of provinces 9. Estimate of counties 12.
Latitude 52—57. Scottish (?) type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to 100 or 150 yards, in England.

Ascends to 600 or 700 yards, in East Highlands.

Range of mean annual temperature 48—41.

Native. Rupestral. The distribution of the present species, as recorded in books, cannot easily or conveniently be reduced under the prescribed formula. Has been reported from the Metropolitan circuit (Cooper), Bedford (Abbott), Worcester (Hastings,—but "extinct"), Stafford (Garner), Monmouth (Conway), Denbigh (Faun. Grust.), Derby (Watson), Lancaster (Woodward), York (C. C. Babington), Westmoreland (Woods), Cumberland (Woodward), Edinburgh (Maughan), Ochills (Watson), Stirling (Don), Forfar (Watson). Probably it ought not to have been introduced into the lists for the Metropolis and Worcestershire at all, some other species having been misnamed G. pusillum. The counties of Bedford, Monmouth, and Denbigh, may require confirmation, though not improbable. Like some other limestone plants, G. pusillum does not accord very closely with the boreal or Scottish type of distribution. It is the alleged locality in Bedfordshire which brings the species within the Inferagrarian zone.

521. GALIUM ANGLICUM, *Huds.*

Area 1 * 3 4 5 [6 * * 9 10].

South limit in Somerset, Kent. (As reported.)

North limit in Norfolk, Staffordshire? Yorkshire?

Estimate of provinces 4 or 5. Estimate of counties 10.

Latitude 51—53 (55). English type of distribution.

Agrarian region. Inferagrarian zone.

Descends to the coast level, in Thames and Ouse.

Ascends to 50 or 100 yards, in England.

Range of mean annual temperature 49—48.

Native. Rupestral and Glareal. I have seen no Eng-

lish specimen of this species. It is reported in Somerset (Flo. Bath.), Kent (G. E. Smith; W. Pamplin, &c.), Middlesex (Ray—B. G.), Suffolk (E. Forster, &c.), Norfolk (Rev. W. Whitear — C. C. Babington), Cambridge (Flo. Cant.), Gloucester (Buckman, in B. G. C.), Warwick (Midl. Flo.), Stafford (Garner, in N. H. S.), Caermarthen (J. Motley, mss.), Chester (Bradbury, in B. G.), York (Knowlton, in B. G.); some of which will likely prove erroneous records, though I am not prepared to distinguish satisfactorily between the true and the false.

GALIUM SACCHARATUM, *All.*

Area [* * 3 * * * * 8 * 10 * * * * 15].

Incognit. Reported from the Metropolitan circuit (Cooper's list), Nottingham (Flo. Nott.), York (R. Miller, in E. F.), Forfar and Perth (G. Don). No specimen is preserved in Smith's herbarium; and probably the localities belong partly to G. tricorne, partly to G. spurium or Vaillantii. The Author of the Flora of Nottinghamshire explained to me by letter that the species of his county was G. tricorne, not G. saccharatum; the latter name having been erroneously substituted for the former in his Flora.

522. GALIUM TRICORNE, *With.*

Area 1 2 3 4 5 * * 8 * 10 11 [12].
South limit in Somerset, Isle of Wight, Kent.
North limit in Northumberland, [Cumberland?]
Estimate of provinces 9. Estimate of counties 25.
Latitude 50—56. Germanic (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.

Descends to the coast level, or nearly so, in Channel.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 51—47.

Colonist. Agrestal. Henslow marks this species as one possibly introduced; while Hooker and Babington admit it an unquestioned native. Approximates to plants of the eastern or Germanic type, by its recorded distribution, though said to extend westward into Somerset, Stafford, and Cumberland; the latter on the dubious authority of Hutchinson, for which it would be desirable to have corroboration; and more especially so, because it appears (Winch Contrib.) that Hutchinson named his plant G. spurium.

523. GALIUM APARINE, *Linn.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Orkney, Hebrides, Sutherland.

Estimate of provinces 18. Estimate of counties 81.

Latitude 50—60. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 150 or 200 yards, in East Highlands.

Range of mean annual temperature 52—45.

Native. Septal and Agrestal. A very common plant, but failing to reach Shetland.

524. GALIUM SPURIUM, *Linn.*
524, b. GALIUM VAILLANTII, *D C.*

Area * * 3 4 [5 * * 8 * * * 12] * * 15.

South limit in Essex, —— ?

North limit in Forfar, —— ?
Estimate of provinces — ? Estimate of counties — ?
Latitude 51—57. English (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, or nearly so.
Ascends to 50 or 100 yards, in England.
Range of mean annual temperature 49—47.

Colonist. Agrestal. The name of 'spurium' having been erroneously applied to G. tricorne, by authors of the last century, some of the old localities connected with that name will be also erroneous, if indicated for the species now designated G. spurium by English botanists. Mr. G. Don is said to have discovered this latter species in Forfarshire, and a specimen is preserved in Smith's herbarium; but Mr. Gardiner appears not to have found the same species in that county. G. Vaillantii was discovered in Essex, very recently, by Mr. G. S. Gibson. I am not aware of localities published in any other county. Mr. C. C. Babington gives me a note for Cambridgeshire, and intimates in his Manual that G. Vaillantii is "not uncommon." More definite information is required, in order to fill up the formula correctly.

525. GALIUM BOREALE, *Linn.*

Area * * [3] * * * 7 * * 10 11 12 13 14 15 16 17 18.
South limit in Caernarvon, York.
North limit in Shetland, Orkney, Sutherland.
Estimate of provinces 10. Estimate of counties 25.
Latitude 53—61. Scottish type of distribution.
A. A. regions. Midagrarian—Midarctic zones.
Descends to the coast level, in E. Highlands (Dickie).
Ascends to 900 or 950 yards, in same province.

Range of mean annual temperature 47—38.

Native. Rupestral. Only in the upper or more northern portion of the midagrarian zone; and approximating towards the Highland type in the character of its distribution. Perhaps the estimate of counties might have been raised to 30, as the species is already known in 25, while Stirling, Caithness, Hebrides, and some not unlikely counties of the Lowlands, still remain blanks for this plant.

526. SHERARDIA ARVENSIS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Ross, Aberdeen, Argyle.
Estimate of provinces 17. Estimate of counties 75.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—46.

Native. Agrestal, Glareal. Even this very abundant English plant gradually decreases northward so far as to remain unrecorded in the lists of species for the three groups of the North Isles; as well as being unnoticed in my own lists of those observed in Caithness, Sutherland, Ross, and Western Inverness. The name is marked in Mr. Gordon's checked list of plants in Ross-shire; and as I noted the species at Lochearnhead, also, it is referred to the Superagrarian zone, and to a temperature so low as 46.

ASPERULA TAURINA, *Linn.*

Area (8 * * * 12).

Alien. "From Miss Worthington's shrubbery at Cadeby, near Market Bosworth, 1836,—who stated that Dr. Power had found it growing wild in the Cow Pastures, near Market Bosworth, and had brought it into the shrubbery." (Rev. A. Bloxam.) Mr. Babington also mentions that it occurs in Casterton woods, Westmoreland, on the authority of the Rev. R. Blunt.

527. ASPERULA ODORATA, *Linn.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Sutherland, Isle of Skye.

Estimate of provinces 18. Estimate of counties 80.

Latitude 50—61. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 400 yards, in East Highlands (Dickie).

Range of mean annual temperature 51—43.

Native. Sylvestral. Unrecorded from Orkney and Hebrides, and a single locality only is indicated in the Flora of Shetland. I have seen it up to 350 yards in North Wales, but not so high as this in the Highlands.

ASPERULA ARVENSIS, *Linn.*

Area (1 * 3 * 10).

Alien or Incognit. Scarce deserving to be kept among

English plants, even as an introduced species; its localities appearing to be transitory and uncertain. Reported to have occurred in Devon, Herts, York; in the latter county on no better authority than that of Mr. Samuel Gibson.

528. ASPERULA CYNANCHICA, *Linn.*

Area 1 2 3 4 5 6 * * 9 10 * 12.
South limit in Devon, Isle of Wight, Kent.
North limit in Westmoreland, York.
Estimate of provinces 9. Estimate of counties 25.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the South of England.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Rupestral? The term used does not very well express the local situations of this species, "on chalky banks;" but whether any other in the series, as glareal or pascual, would be nearer, I cannot say, being very little familiar with its localities.

529. CENTRANTHUS RUBER, *DC.*

Area (1 2 3 4 5 6 7 8 * 10 11 * * 14).

Alien. More or less naturalized in some 20 to 25 counties, which are spread through many of the provinces, as is shown above; but the more northerly localities are rather planted than spontaneous, as some of the southern habitats appear to be, which take their origin from the seeds having been carried by the winds into chalk-pits, and such like places.

530. CENTRANTHUS CALCITRAPA, *Dufr.*

Area (* * 3).

Alien. This has very slender claims to inclusion among our British plants as a naturalized alien. It has, however, existed on walls at Eltham, in Kent, for half a century, and was formerly found on a garden wall at Enfield, in Middlesex. See Phytologist, iii. p. 649, where some explanations are given by Mr. E. Forster.

531. VALERIANA DIOICA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 * 14 15 16.
South limit in Devon, Isle of Wight, Kent.
North limit in Linlithgow, Fife? Dumbarton?
Estimate of provinces 16. Estimate of counties 50.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 400 or 450 yards, in Lake province.
Range of mean annual temperature 51—43.

Native. Paludal. In most English counties, and recorded in half a dozen of the Scottish. In the Flora Glottiana there is the single locality of "Balvie," which is not copied into the Flora Scotica of Hooker, and I am uncertain whether the alleged locality is correctly referred to the county of Dumbarton. Mr. Lawson enumerates V. dioica among the plants of Fife; and there seems no improbability in this, except that the county has been examined by many other botanists, who do not appear to have recorded its existence there. In consequence, the names of these

two Highland counties are placed interrogatively in order to draw forth a confirmation; while they are assumed to be correct in indicating the area, census, &c. I have seen the species in Cumberland at an elevation which was estimated to be above 1200 feet.

532. VALERIANA OFFICINALIS, *Linn.*
532, b. VALERIANA SAMBUCIFOLIA, *Mik.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Hebrides, Ross.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—60. British type of distribution.
A. A. region. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 650 yards, in East Highlands.
Range of mean annual temperature 52—41.

Native. Paludal. It is impossible to separate the localities recorded for one or other of these two alleged species, under the common name of V. officinalis. Nor, indeed, am I prepared to do this with the specimens in my own herbarium, most or all of which probably belong to V. sambucifolia. Mr. Babington says that the latter is "a species universally adopted on the Continent;" and yet he can adduce no better contrast of characters than 5 pairs of leaflets for V. sambucifolia, and 7 or upwards for V. officinalis: to which, then, belong examples with six pairs of leaflets? If true species, there must be better characters than the single one mentioned. In the Prodromus of De Candolle, V. sambucifolia is indeed entered as if a species, but the description is followed by the question, "An V. officinali satis differt?"

533. VALERIANA PYRENAICA, *Linn.*

Area (* * * 4 5 * 7 * * * * * * 13 14 15 16).

Alien. An introduced plant which has become pretty well established in the Middle and South of Scotland. I observed it sparingly near Pentir, in Caernarvonshire. Mr. Carter records it as having become established near Cheadle, in Staffordshire. Dr. Clarke reports it as found in woods at Freston, three miles from Ipswich.

534. FEDIA OLITORIA, *Vahl.*

535. FEDIA CARINATA, *Stev.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Orkney, Sutherland.

Estimate of provinces 18. Estimate of counties 80.

Latitude 50—60. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 52—46.

Native. Agrestal, &c. The presumption appearing so strong in favour of the view which regards V. carinata as only an accidental variety of V. olitoria, and so little being known about the distribution of the former apart from the latter form mentioned, it seems more advisable to treat them in union. Dr. Bromfield has lately written on this point, "V. carinata, which abounds in Normandy and the Channel Islands, will probably be found in this [Hants], as it has already been in other counties of England; but its great

resemblance to V. olitoria, from which it is scarcely distinguishable but by its fruit, renders the detection less easy." ..... "Without pretending to decide the point, I incline to the belief that V. carinata holds the same relation to V. olitoria as V. Auricula does to V. dentata, and that the value of each as distinct species is, to say the least, very problematical." (Phytol. iii. 428). V. carinata has been recorded from provinces 1, 3, 5, 7. (See Bot. Gaz. i. 109).

537. FEDIA DENTATA, *Bieb., Vahl.*
537, b. FEDIA MIXTA, *Vahl.*
538. FEDIA ERIOCARPA, *Aut. Brit.*
536. FEDIA AURICULA, *D C.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Forfar, Lanark.
Estimate of provinces 16. Estimate of counties 70.
Latitude 50—58. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.
Colonist. Agrestal. The provinces of the Lakes and West Highlands have been added in the estimate above, since probability seems to be rather in favour of, than against, the occurrence of the species there. Though certainly found in some few spots beyond the latitudinal line of 57, and therefore just within the superagrarian zone, this is most likely the case only by agricultural introduction. Fedia Auricula has been recorded from provinces 1, 2, 3, 5, 6, 10, 15. "We have only to conceive the two anterior barren cells of V. dentata to become inflated, and

consequently gibbous, and then I do not see in what it would differ from V. dentata." (Dr. Bromfield, in Phytol. iii. 428.) I have not seen the Fedia eriocarpa from Caernarvonshire. Sir William Hooker and Mr. William Wilson both are now said to consider it a variety of F. dentata. The other recorded localities for F. eriocarpa, in Yorkshire and Isle of Wight, belong to F. mixta.

DIPSACUS FULLONUM, *Linn.*

Area (1 * * * 5 * * * 9 10 11 * 13 14 15).

Alien. Occasionally seen as a waif from cultivation; but I suspect that some of the published localities really belong to D. sylvestris.

539. DIPSACUS SYLVESTRIS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 * 14 15 16.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Fife, Dumbarton. (Introduced?)

Estimate of provinces 16. Estimate of counties 50.

Latitude 50—57. English type of distribution.

Agrarian region. Inferagrarian—Midagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 52—47.

Native. Septal, Viatical, &c. Apparently a very local plant in Scotland, and by no means clearly indigenous there. I possess a specimen from Dr. Joseph Hooker, localized from Dumbartonshire, which is my sole authority for the West Highlands. The Rev. G. Gordon pronounces it certainly introduced into Moray (Collectanea); and Mr.

Gardiner does not deem it indigenous in Forfarshire, though said to have occurred in that county. Dr. Gilbert Macnab found it "in immense profusion," between Dysart and Weems, in 1834; and there are other localities given for it in the counties of Fife and Edinburgh. Introduced to the neighbourhood of Berwick, and not established in any permanent station. Omitted from the Floras of Aberdeen, Lanark, and Glasgow; unless the "D. Fullonum," of the latter publication, should really intend D. sylvestris. Frequent or common in the South of England.

540. DIPSACUS PILOSUS, *Linn.*

Area 1 2 3 4 5 * 7 8 9 10 (11) * * * [15].
South limit in Somerset, Dorset, Sussex, Kent.
North limit in York, Chester, Flint, Denbigh.
Estimate of provinces 9. Estimate of counties 30.
Latitude 50—55. Germanic type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Sylvestral. Looking to the provincial area, as above set forth, it might appear that this plant should be referred to the English, rather than to the Germanic, type of distribution. But its apparent absence from the two most westerly counties of the Peninsula, as also from the six counties of South Wales, indicates a decided approximation to the eastern or Germanic type, although shading off towards the English type likewise.

541. SCABIOSA SUCCISA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 800 or 850 yards, in East Highlands.
Range of mean annual temperature 52—38.
Native. Ericetal, Pascual. Though banished by the farmer from his arable lands and manured meadows, this is still one of the most generally distributed among our native plants.

542. SCABIOSA COLUMBARIA, *Linn.*

Area 1 2 3 4 5 6 7 8 * 10 11 12 * 14 15.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Aberdeen, Westmoreland, Anglesea.
Estimate of provinces 13. Estimate of counties 40.
Latitude 50—58. Germanic type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 400 or 450 yards, in North Wales.
Range of mean annual temperature 51—45.
Native. Pascual, Rupestral. It will be seen from the three counties named above for the northern limit of this species, as well as from the provincial area indicated, that it still approximates closely to the principal peculiarity of

the Germanic or eastern type, notwithstanding its extension into several of the western counties of England. I am aware of only a single locality on record in the western provinces situate northward of Wales, namely, the neighbourhood of Kendal, in Westmoreland. Though a chalk and limestone species, seldom found on other soils, this calcareous attachment cannot be the only cause of its eastern tendency, as it appears to be quite absent from Ireland. On account of the elevation attained in Denbighshire, on Eglewyseg Craigs, it is necessary to indicate the superagrarian zone, and also a lower temperature than is found in its most northerly localities.

543. KNAUTIA ARVENSIS, *Coult.*
† KNAUTIA PUBESCENS, *W. R.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Sutherland.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—46.

Native. Agrestal, &c. Omitted from the Floras of Shetland and the Hebrides; but it may be difficult to select any other county from which this species is more likely to be absent, than it is likely to be present therein. Accordingly, the comital estimate is taken at 80, although I am not prepared to adduce authorities for more than 55 counties. The species has probably been introduced through agriculture into the North of Scotland. In the

Botanical Gazette (No. 1, p. 6), Mr. Babington mentions that the variety 'integrifolia,' the Scabiosa pubescens of Willdenow, has been found at Cherry Hinton, in Cambridgeshire, along with the connecting links which unite it with K. arvensis.

544. TRAGOPOGON PRATENSIS ("*Linn.*") *Aut. Ang.*
544, b. TRAGOPOGON MINOR, *Fries.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 * 17.
South limit in Devon, Isle of Wight, Kent.
North limit in North-west Sutherland, Aberdeen.
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—59. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—46.

Native. Pratal. I have never seen specimens of more than two species of Tragopogon in Britain, namely, T. porrifolius and the present one, which is recorded in books under the several names of T. pratensis (most authors, up to 1830), of T. major (some few writers between 1830—40), and T. minor (several recent authors). I cannot positively assert that these three latter names invariably mean one and the same single species, but usually they do so. The comparative length of involucrum and florets is very inconstant in the living specimens which grow intermingled, and have no other available distinction; and this uncertainty is augmented by the process of pressing the specimens for preservation, which apparently elongates the more advanced florets, though it is only by protruding them upwards from the fruit or receptacle. The probability that

this may be found in the province of Lakes or West Highlands, seems to justify the addition of one of them to the estimate of provinces.

545. TRAGOPOGON PORRIFOLIUS, *Linn.*

Area 1 2 3 4 5 (6 7 8 9 10) * [12 13 * 15].
South limit in Cornwall? Somerset, Sussex, Kent.
North limit in Monmouth, Essex,—or Stafford, Norfolk.
Estimate of provinces 6. Estimate of counties 12.
Latitude 50—52 (53). English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to 50 or 100 yards, in England.
Range of mean annual temperature 51—48.

Denizen. Pratal, Paludal. Native or established about the coasts of the southern provinces; but very doubtful in its reported localities farther north than the coasts adjacent to the Thames and Severn estuaries. Miss Harvey sent a flowering specimen of T. porrifolius with a fruiting specimen of T. minor (as they seem to be, but in very bad condition for determination) to the Botanical Society of London, labelled as if collected on Burntisland. This is my sole authority for the province of East Highlands; and experience has amply warned me against implicit reliance on the localities stated in the labels distributed with specimens from the lady named; since it is quite obvious to me, that she has no just appreciation of the necessity for accuracy in such matters. The Flora Glottiana is the authority for the West Lowlands; Nicholson, in the publication of Dillenius, that for the Lakes; and Gerarde, as quoted in Bot. Guide, for the Mersey.

546. HELMINTHIA ECHIOIDES, *Gaert.*

Area 1 2 3 4 5 6 7 8 9 10 11 * * 14.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Lancaster, Durham, Berwick-on-Tweed.
Estimate of provinces 12. Estimate of counties 40.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Viatical, Agrestal, &c. The usual situations in which this plant occurs, as by the side of fields or pathways and on ditch or hedge banks, may be held to place it intermediate between the agrestal and viatical, or the agrestal and septal plants. I am aware of only two habitats northward of Durham; one, in the vicinity of Berwick-on-Tweed (Thompson, &c.); and the other, by the "side of a path between Roslin and Lasswade, Edinburgh," where Dr. Graham reported (Excurs. 1835) that it had been found by Mr. James Macauley, but probably introduced to the spot. Is it indigenous near Berwick-on-Tweed?

547. PICRIS HIERACIOIDES, *Linn.*

Area 1 2 3 4 5 6 7 8 * 10 11 * [13].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Durham, York, Montgomery.
Estimate of provinces 10. Estimate of counties 40.
Latitude 50—55. English (?) type of distribution.

Agrarian region. Inferagrarian—Midagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 51—47.

Native. Agrestal, Septal, &c. The early northward termination of this species on the western side of England, compared with the eastern, gives something of the Germanic character to its distribution. But if we rely upon published statements, the species re-appears plentifully in the county of Lanark, and even in Scotland generally. Babington, however, expressly limits it to England and Ireland; and I believe him to be showing his usual care and accuracy, as a botanical author, by doing so. The Picris has no place in the Flora Scotica of Lightfoot. In the Flora Glottiana (Flora of Glasgow or the Clyde) of Hopkirk, it is enumerated, in general terms, as found by "road-sides and borders of fields, frequent." We have it described in the Flora Scotica of Hooker, and its habitat again indicated in precisely the same words, without the mention of any locality, county, or personal authority. In the Indigenous Plants of Lanarkshire, by Patrick, it is likewise enumerated, and still with almost the same general indication, "Frequent by road-sides and borders of fields." I do not know that any other author on the local botany of Scotland has mentioned this species; and I suspect that the following explanation will scarcely be disputed. Hopkirk probably mistook some other plant for the species now under consideration. Hooker, with that hasty indifference to strict accuracy which unfortunately too often appears in his valuable works, repeated Hopkirk's local blunder, extended it to Scotland generally, and recorded it as if his own observation. Then comes Patrick, and does likewise; but restricting it to the one county of Lanark. Nevertheless, there is just a possibility that Hop-

kirk and Patrick may be both correct, and the only error be that of Hooker, in giving generality to a strictly local fact. I have gone a little into detail here, because the example is a very suitable one for exhibiting the uncertainty which pervades our published records about the localities and distribution of species; and also, I fear, it must be added to the many examples which I have found, of authors republishing the observations of their predecessors, not only without acknowledgment, but even in terms which imply that they are truly recording their own original observations,—a procedure which, as appears to my mind, is altogether indefensible, whether we look to it as a question of truth and justice, or whether we regard it only in its evident tendency to diffuse and perpetuate error along with fact.

548. LEONTODON HIRTUM, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Fife, and about Glasgow.
Estimate of provinces 15. Estimate of counties 60.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Pascual, &c. Neither the Lake nor the West Lowland province would seem very unlikely for the present species. But it appears to be decidedly scarce or local in Scotland, although so very abundant over a large part of England. Mr. W. Gardiner publishes it (Phytologist, i. p. 471) as having been found by himself on Stuich-an-

lochan, in Breadalbane; which, if it were a reliable fact, would carry the range of latitude one degree more northward, and the ascending range up even to the midarctic zone.

549. LEONTODON HISPIDUM, *Linn.*

Area 1 2 3 4 5 6 7 8 * 10 11 * 13 14 15 * * [18].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Forfar, and about Glasgow.
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Pratal, Pascual. This has been stated to grow in Orkney, but on indifferent authority; and I have received Hypochœris radicata, thus labelled, among a set of specimens collected in Orkney. Gardiner says that it occurs plentifully in Forfarshire, "in sandy pastures near the sea, as well as on the moory ground, way-sides, and hills, inland." I know of no locality more northerly. Hopkirk records it "in pastures occasionally" about Glasgow, which gives a probability of its occurrence in Dumbarton or Argyle, and thus in the West Highland province. Those of the Mersey and Lakes would seem very probable, and, indeed, I think that it has been seen in both of those provinces by myself, although I possess no written memorandum of the fact.

550. LEONTODON AUTUMNALE, *Linn.*
550, b. LEONTODON TARAXACI, "*Willd.*"

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Superarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 1000 yards, in West Highlands.
Range of mean annual temperature 52—37.
Native. Pascual, Ericetal, &c. Rare above the mid-arctic zone. In the form of L. Taraxaci, it occurs in North Wales and the four northerly provinces of Scotland; but the transition from L. autumnale into L. Taraxaci is so gradual, that I feel quite unable to say to what elevation the former may ascend, or the latter may descend. Mr. J. E. Moxon has recorded that "Apargia Taraxaci" occurs plentifully in Sandringham chalk-pit, West Norfolk; but surely he must intend some other plant under that name?

551. HYPOCHŒRIS GLABRA, *Linn.*

Area 1 2 3 4 5 6 * 8 9 10 11 * 13 * 15.
South limit in Devon, Isle of Wight, Kent.
North limit in Moray, Forfar, Ayr.
Estimate of provinces 12. Estimate of counties 25.
Latitude 50—58. English (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 51—47.

Native. Agrestal, Glareal. Thinly scattered over great part of Britain; but the recorded Scottish habitats are so few and distant (Ayr, Forfar, Moray) that it has appeared better to deem this plant an example of the English type of distribution. Mr. Gardiner does not appear to have confirmed its occurrence in Forfarshire, where G. Don recorded it. Like the Arnoseris pusilla, often found in companionship, the H. glabra seems almost restricted to sandy ground as a permanent resident.

552. HYPOCHŒRIS MACULATA, *Linn.*

Area [1 2 3] 4 [5] * 7 * * [10 * 12 * * 15].

South limit in Suffolk, Cambridge.

North limit in Caernarvon.

Estimate of provinces 2. Estimate of counties 3.

Latitude 52—54. Local type of distribution.

Agrarian region. Inferagrarian zone.

Descends to the coast level, or nearly so.

Ascends to 50 or 100 yards.

Range of mean annual temperature 49—48.

Native. Rupestral? I make no doubt that the greater number of localities recorded for this plant are wide errors, through mistaking the maculate varieties of Hieracium murorum, and probably other species of the same genus, for the present plant. My only specimen was received from Sir William Hooker, and labelled from Suffolk. The Cambridge and Caernarvon habitats appear deserving of credit; and perhaps that of the Lizard, in Cornwall, may be equally so; although some doubt will attach to this latter, from the plant being too large and conspicuous to

have easily eluded the eyes of the many good botanists who had visited the Lizard before the Rev. W. S. Hore; and Mr. Gibson saw it in leaf only.

553. HYPOCHŒRIS RADICATA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Hebrides, Sutherland.
Estimate of provinces 18. Estimate of counties 81.
Latitude 50—60. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 600 yards, in East Highlands.
Range of mean annual temperature 52—41.

Native. Pascual. Seldom seen in the arctic region, but general throughout the agrarian. Its absence from the Flora of Shetland leads to the deduction of one county in the estimate, which might otherwise have been the highest step of the comital series.

554. LACTUCA VIROSA, *Linn.*

Area 1 2 3 4 5 6 [7] 8 * 10 11 * * 14 15 * * [18].
South limit in Somerset, Isle of Wight, Kent.
North limit in Perth, Stirling.
Estimate of provinces 12. Estimate of counties 30.
Latitude 50—57. Germanic type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in Channel province.
Ascends to 100 or 200 yards, in Scotland.
Range of mean annual temperature 51—47.

Native. Viatical, Septal, &c. Thinly scattered from the south coast of England northward into the low tracts in the south-east Highlands, as at Stirling, Kinnoul, Dunkeld. So rare towards the western coasts of England that it seems proper to consider the species as one of the Germanic type; although recorded from three of the western provinces, on authority which will pass unchallenged; and likewise enumerated in the Faunula Grustensis as a native of North Wales.

555. LACTUCA SCARIOLA, *Linn.*

Area * 2 3 4 * * * [8].
South limit in Sussex, Kent.
North limit in Cambridge, Suffolk?
Estimate of provinces 3. Estimate of counties 6.
Latitude 50—54. Germanic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Channel province.
Ascends to 50 yards, more or less, in England.
Range of mean annual temperature 51—48.

Native? Viatical, &c. A very local plant, and perhaps made to appear more frequent than is real by the distribution above indicated. The few English specimens which have been sent to me, under this name, have proved either L. virosa or L. saligna; and as the same locality is occasionally given for two different species, by two observers, respectively one for each, great doubt must attach thereto. Has been reported from the counties of Sussex (Rev. W. W. Newbould), Kent (Mr. E. Forster, in B. G.), Surrey (Mr. W. Pamplin, in N. B. G.), Middlesex (Mr. E. Forster, in B. G.), Suffolk (Winch notes, in N. B. G.), Cambridge (Henslow's Catalogue, &c.), Derby (Mr. J. Martin, in B. G.)

556. LACTUCA SALIGNA, *Linn.*

Area * 2 3 4 5 * * 8.
South limit in Dorset, Sussex, Kent.
North limit in Notts, Leicester, Worcester, Hereford.
Estimate of provinces 5. Estimate of counties 10.
Latitude 50—59. Germanic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Channel.
Ascends to 50 or 100 yards, in England.
Range of mean annual temperature 51—48.

Native. Viatical. Some of the localities recorded for the present species may likely belong to L. virosa, more particularly those in the counties indicated for the northern limit; but, if so, I have not the means of correctly distinguishing the true from the false indications. See also the remarks on the misapplication of names under L. Scariola.

557. LACTUCA MURALIS, *DC.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 * * 15.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray;—or Cumberland, Northumberland.
Estimate of provinces 15. Estimate of counties 50.
Latitude 50—56 (58). English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 yards, in Cumberland.
Range of mean annual temperature 52—45.

Native. Septal, &c. Ascertained in about forty of the English counties and may be expected to occur in

some of the others which have been hitherto less fully explored. It has been discovered in Moray since the 'Collectanea' was published; namely, at Main, near Elgin, where the Rev. G. Gordon deems it not certainly native. An isolated locality, far beyond the limit of a species otherwise, may usually be considered suspicious; but looking to the altitude attained by the present species in Cumberland, and to the high northern latitude (middle of Sweden and North Russia) attained on the Continent, the province of East Highlands may be considered quite within its natural range of temperature, latitude, &c.

PRENANTHES PURPUREA, *Linn.*

Area (16).

Alien. Partially naturalized near the Castle [of Dunvegan?] in Skye. (Balf. and Bab. Acc. Hebr. p. 5.)

558. SONCHUS PALUSTRIS, *Linn.*

Area [1 2] 3 4 [5 * * 8 * * * * * 14].

South limit in Kent.

North limit in Norfolk, Cambridge, Hunts.

Estimate of provinces 2. Estimate of counties 6.

Latitude 50—53. Germanic type of distribution.

Agrarian region. Inferagrarian zone.

Descends to the coast level, in Thames province.

Ascends to 50 yards, or less, in England.

Range of mean annual temperature 50—48.

Native. Paludal. Very rare; and I fear it has been reported from several counties erroneously, through the mistaking of S. arvensis, when found in wet ground, for the

present species. I have seen specimens only from Kent (Mr. R. Kippist), and Suffolk (Mr. J. Paget). It is recorded also from Devon, Dorset, Surrey, Middlesex, Essex, Stafford, Salop, Leicester, Nottingham, Edinburgh, with the three counties above named for the assumed northern limit in this country.

559. SONCHUS ARVENSIS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Ross.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 yards, in East Highlands.
Range of mean annual temperature 52—45.
Native. Agrestal, Inundatal. I did not observe this species in Sutherland or Caithness, nor is it mentioned by Balfour and Babington among the plants noticed by them in the Outer Hebrides. Still, since it is said to be frequent in Moray (Gordon), and "everywhere" in Shetland (Edmondston), I have estimated its comital census at the full number of 82; deeming the species more likely to be present than absent in the counties mentioned.

560. SONCHUS ASPER, *Hoffm.*

Area general?
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Hebrides.

Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—45.

Native. Agrestal, &c. Having only quite lately been well distinguished from S. oleraceus, by English botanists, this species would appear much less frequent than S. oleraceus, by its recorded habitats strictly kept to. But having been already reported from about half the total number of counties, and from the south coast of England to the extreme north of Scotland or adjacent Isles, the generality of its distribution, both by provinces and by counties, may be assumed so long as no probable exception is made apparent.

561. SONCHUS OLERACEUS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Caithness.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 yards, in East Highlands.
Range of mean annual temperature 52—43.

Native. Agrestal, &c. This species and S. asper usually grow intermingled; but some of the habitats recorded under name of the present species, especially those of old date, may perhaps produce only S. asper. Balfour and Babington appear to have noticed only the latter in the

Outer Hebrides; but the Shetland Flora enumerates both of the species. I have a note of "S. oleraceus" seen just above Castletown, in Aberdeenshire, in 1832; though I cannot now say certainly that it was not S. asper which was observed there in that year.

562. SONCHUS ALPINUS, *Linn.*

Area * * * * * * * * * * [11] * * * 15.
South limit in Forfarshire.
North limit in Aberdeenshire.
Estimate of provinces 1. Estimate of counties 2.
Latitude 56—57. Highland type of distribution.
Arctic region. Midarctic zone.
Descends to 700 or 750 yards, in East Highlands.
Ascends to 950 yards, in same province.
Range of mean annual temperature 40—37.

Native. Rupestral. Very local; being restricted to a few rocky spots on the range of mountains about the line of union between Forfar and Aberdeen shires. Probably the browsing of sheep and deer, with the frequent visits of botanists, are the operative causes for this very restricted area and the scarcity of the individual plants. It is reported to have been found in Northumberland, although only on authority which cannot be safely relied upon.

563. CREPIS VIRENS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 81.

Latitude 50—60. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 350 yards, in East Highlands.

Range of mean annual temperature 52—44.

Native. Agrestal, &c. One county has been deducted from the estimate, on account of the species being omitted from the Flora of Shetland. I think it is infrequent in the Highland valleys, but I have noted it as seen at Dalnacardoch, Killin, and Callander; and the Rev. G. Gordon marks it very common in Moray.

564. CREPIS BIENNIS, *Linn.*

Area [1 2] 3 4 * [6] 7 8 * 10 11 12.

South limit in Kent. [Somerset? Dorset?].

North limit in Westmoreland? Northumberland.

Estimate of provinces 6. Estimate of counties 10.

Latitude 51—56. English type of distribution.

Agrarian region. Inferagrarian—Midagrarian zones.

Descends to the coast level, or nearly so, in Thames.

Ascends to 50 or 100 yards, in England.

Range of mean annual temperature 49—47.

Native. Pascual, &c. Some of the localities which have been recorded for this species, only lately distinguished in a satisfactory manner, belong undoubtedly to Barkhausia taraxacifolia; while others may possibly belong to Crepis virens. I possess specimens from the counties of Essex (Mr. G. S. Gibson) and Leicester (Rev. Andrew Bloxam) only. What is stated to be the "true" plant has been indicated also from Kent (Mr. Edward Edwards) and from Cambridge (Mr. C. C. Babington). Three provinces are cut off from the area above shown, because they rest only

on single authorities, and I fear that they will prove erroneous; namely, Somerset (Dr. Southby), Dorset (common near Poole — Dr. Salter), Caermarthen (common — Mr. James Motley). There remain the counties of Surrey, Herts, Suffolk, Caernarvon, Notts, Derby, York, Durham, Northumberland, Westmoreland; and in these probably either Crepis biennis or Barkhausia taraxacifolia may occur, though it may be at present impossible to say which of the species will be found there.

565. CREPIS PULCHRA, *Linn.*

Area [15].

Incognit. G. Don stated that he found this plant among the debris of the rocks of the hills of Turin and Pitscandly, in Forfarshire, but very rare. In one of these places—the hill of Turin—it was sought unsuccessfully by Mr. Gardiner, in 1845, who says (Flo. Forf.) that a turnip-field now occupies the spot.

566. CREPIS SUCCISÆFOLIA, *Tausch.*

Area * * * * * * * * * 10 11 * * 14 15 16.
South limit in Yorkshire.
North limit in Aberdeen, Dumbarton.
Estimate of provinces 5. Estimate of counties 8.
Latitude 54—57. Highland type of distribution.
A. A. regions. Superagrarian—Inferarctic zones.
Descends to —— ?
Ascends to —— ?
Range of mean annual temperature (say, 45—41).
Native. Rupestral, Sylvestral. I have not seen this

species in a wild state; and the records of its localities are not sufficiently exact to convey any clear idea of its climate, altitude, &c. Has been stated to occur in the counties of York, Durham, Northumberland, Berwick, Fife (Ochills), Forfar, Aberdeen, Dumbarton, — if the last-mentioned county be intended by Mr. Borrer's locality (Hook. Flo. Scot.) of the "Lower Fall of the Tummel, Glen Luss."

567. CREPIS PALUDOSA, *Moench.*

Area * * * * 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Glamorgan, Salop, Leicester.
North limit in Ross, Skye, Aberdeen.
Estimate of provinces 13. Estimate of counties 40.
Latitude 51—58. Scottish type of distribution.
A. A. regions. Midagrarian—Inferarctic zones.
Descends to 50 or 100 yards, in North of England.
Ascends to 650 yards, in East Highlands.
Range of mean annual temperature 47—40.

Native. Paludal, Pratal, Sylvestral. In damp and shaded places chiefly, and thus not precisely falling under any single term expressive of the usual situations of growth. Occurs about Derwent-water, in Cumberland, which is below 100 yards of elevation, and may perhaps be known at a lower level in England; while in the Highlands it is a plant of the coast level. My notes of localities include 33 counties, and some others appear sufficiently likely to justify the estimated census of 40, rather than the next lower step of 30, counties.

568. HIERACIUM PILOSELLA, *Linn.*

568, b. HIERACIUM PELETERIANUM, *Mer.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Orkney, Hebrides, Sutherland.

Estimate of provinces 18. Estimate of counties 81.

Latitude 50—60. British type of distribution.

A. A. regions. Inferagrarian—Inferarctic zones.

Descends to the coast level, in the Peninsula.

Ascends to 750 yards, in East Highlands.

Range of mean annual temperature 52—39.

Native. Pascual, Glareal. Almost within the midarctic zone on the hills about Braemar, in Aberdeenshire. In estimating the county census I have not included the Shetland Isles, because Edmondston has not enumerated the species in his Flora of Shetland. It occurs in Orkney and Faroe, and over the whole of Scandinavia (Fries Summa); and thus, notwithstanding its omission from the probably incomplete catalogue of Shetland plants, the estimate might be more true if carried up to the highest number of counties. Incomplete data may readily be expressed so long as we keep to general (that is, vague or inexact) terms; but in attempting to give them a numerical or statistical form, where units are required, the imperfect state of our information becomes apparent. This, under existing circumstances, is far from undesirable; since, by showing the want, it may lead to the void being filled up in some instances.

569. HIERACIUM AURANTIACUM, *Linn.*

Area (* * * * * 6 * * 9 * * 12 * 14 15 16).

Alien. Recorded from about a dozen counties, but everybody seems to hold it only an introduced plant.

HIERACIUM AURICULA, *Linn.*

Area [12].

Incognit. This has been long on record as found somewhere in Westmoreland or Cumberland, or in both counties, but the locality very inexactly indicated; and the presumption seems strong that some other species may have been mistaken for the present one. A note on the locality, by Mr. W. Borrer, in Phytologist, ii. p. 434—5, may be advantageously consulted by those botanists who are desirous to hunt for the species in the Lake province.

HIERACIUM DUBIUM, *Linn.*

Area [8 * * * 12].

Incognit. Involved in equal obscurity with the preceding species. On Fairfield mountain, near Rydal, in Westmoreland, according to Hudson's Flora Anglica. In Turner and Dillwyn's Guide we have three localities cited, two of which may possibly mean the same place as the one above given from Hudson; namely, Keswick and Patterdale, in the Lake province,—and Coxbench wood, in Derbyshire.

570. HIERACIUM ALPINUM, *Linn.*
570, b. HIERACIUM HALLERI, "*Vill.*"

Area * * * * * * 7 * * * * 12 * * 15 16 17.
South limit in Caernarvon, Westmoreland, Perth.
North limit in Sutherland, Isle of Skye.
Estimate of provinces 5. Estimate of counties 15.
Latitude 53—59. Highland type of distribution.
Arctic region. Midarctic zone.
Descends to 550 yards, in North Highlands.
Ascends to 1000 or 1050 yards, in East Highlands.
Range of mean annual temperature 40—36.

Native. Rupestral. Ascertained to occur in 12 counties, exclusive of Stirling, Kincardine, Banff, Caithness, and the three groups constituting the province of the North Isles; and as none of these counties or isles appear unlikely habitats, except on the ground of having been already partially examined, the comital estimate has been assumed at the first step in the series above 12. The species ranges to the extreme limits of the midarctic zone, both ascending and descending, and may perhaps be an inhabitant of all the three arctic zones.

571. HIERACIUM NIGRESCENS, *Willd.*

Area * * * * * * * * * * * [12] * * 15 16.
South limit in Perth, Forfar. [Westmoreland?]
North limit in Aberdeen, West-Inverness.
Estimate of provinces 3. Estimate of counties 8.
Latitude 56—58. Highland type of distribution.
Arctic region. Midarctic zone.

Descends to 700 yards, in East Highlands.

Ascends to 1000 yards, in same province.

Range of mean annual temperature 40—37.

Native. Rupestral. Long known as a Highland plant, although only quite recently distinguished as a species in a satisfactory manner. Judging by Smith's herbarium, this is the species which he had in view in describing his H. pulmonarium; but this latter name has been so variously applied and misapplied, that no reliance can be placed on localities recorded by the name of "pulmonarium" in books. Mr. James Backhouse reports (Phytologist, ii. 1044) H. nigrescens as having been found by himself in Westmoreland and Cumberland; but in the existing uncertainty about the species, I must hesitate to receive that record as a clearly ascertained fact. My own specimens of H. nigrescens have been gathered in the counties of Forfar, Aberdeen, and Inverness; and a garden specimen is preserved in Smith's herbarium, with a note of its original habitat being on Ben-y-gloe, Perthshire, whence it was brought by Mr. Mackay.

HIERACIUM NUDICAULE, *Edmondst.*

Area [12 * * 15].

Incognit? Difficult to decide under what category this plant should be placed. The name certainly represents something seen by the late Mr. Edmondston; but whether it represents a variety of some recognized British species, or a distinct species,—and, if the latter, whether a novelty, or a species previously described by any foreign author,—are questions which nobody seems prepared or disposed to answer. It was described by Edmondston in the Phytologist, ii. p. 184, as having been found on the banks of the

Findhorn, near Forres, in Moray, in July, 1844; and he intimated that he had subsequently seen a specimen from Breadalbane, in Dr. Balfour's herbarium, "placed in the same sheet with H. Lawsoni, from which species it is, however, quite distinct." Again, in the same periodical, vol. ii. p. 434, Mr. Borrer writes, while alluding to one of his botanical tours in Westmoreland, "Stockgill is rich in Hieracia of the murorum group. Among them is one which I fancy may be H. nudicaule of Edmondston. I gathered the same by the Findhorn, and by some other Highland streams, in 1810; but I have never satisfied myself about it. I hope now to study it under cultivation." Under these circumstances, it is curious that Mr. C. C. Babington has not noticed Edmondston's plant in the second edition of his Manual, which is so complete an epitome of British botany in most respects. The plant will probably prove to be an example of H. murorum, grown in a shaded spot.

572. HIERACIUM MURORUM, *Linn.*

Area general?

South limit in Devon, Dorset, Sussex.

North limit in Shetland, Orkney, Hebrides.

Estimate of provinces 18. Estimate of counties 70.

Latitude 50—61. British type of distribution.

A. A. regions. Inferagrarian—Midagrarian zones.

Descends to the coast level, or nearly so, in Channel.

Ascends to 850 yards, in East Highlands.

Range of mean annual temperature 50—38.

Native. Rupestral, Septal. My notes show no localities for this species in the provinces of South Wales or the Mersey, which appear so likely to produce it that the Area is above interrogatively given as general. In books the H.

murorum and sylvaticum are inextricably confused, and hence much uncertainty about their respective localities; and, indeed, there are specimens of one or both in my own herbarium, which I am unable to name with any confidence of accuracy. Besides the forms which approximate to H. sylvaticum, there is another with very glaucous, thin and large leaves, which I have collected in Surrey and Cumberland, and which is propagated freely by seed. Judging by a rude sketch of H. nudicaule, shown to me by Edmondston, in 1844, this latter form may be the same with his plant, although usually it has one or two stem-leaves.

572*. HIERACIUM SCHMIDTII, *Tausch.*

Area * * * * * * 7 8 * 10 * 12 * * 15.
South limit in Leicester, Caernarvon, York.
North limit in Westmoreland, Perth, Forfar.
Estimate of provinces — ? Estimate of counties — ?
Latitude 52—57. Highland (?) type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to a trifling elevation, in England.
Ascends to 800 yards, more or less, in E. Highlands.
Range of mean annual temperature 48—39.

Native. Rupestral. With this alleged species I am totally unacquainted. The above-mentioned counties are all in which I am aware of localities on the authority of other parties; four of them resting on manuscript memoranda obligingly supplied by Mr. C. C. Babington, and the other two on the authority of Mr. Borrer. The latter botanist is quoted for the name in the Flora of Forfarshire; and he has also, somewhat vaguely, indicated the occurrence of the plant in Westmoreland, in a paper in the Phytologist, ii. p. 434. In his Manual Mr. Babington mentions no

localities; giving only the general habitat of "mountainous districts." Is there not some error about Leicestershire? Mr. Babington gives the name of the Rev. A. Bloxam as that of the local authority for his Leicestershire specimen; but specimens sent to the Botanical Society of London, by the latter botanist, as "H. Schmidtii?" cannot be the species described in the Manual, and answer much better to H. sylvaticum. The formula has been filled in as well as the slender supply of information could enable this to be done; but the true distribution cannot be properly indicated at present. The estimate of provinces and counties cannot be yet made, unless by way of mere conjecture. The latitude is set down by the first lines southward of Leicestershire, northward of Forfarshire; those two being the most distant counties in which localities have been stated. With the exception of Netherseal, in Leicestershire, all the localities are on or about mountains; and therefore the Highland type is indicated. It is on account of the alleged occurrence of the plant in the latter county, that a trifling elevation, the inferagrarian zone, and the temperature of 48, are considered to be within its range of climate, &c. The midarctic zone, the altitude of 800 yards, or so, and the temperature of 39, are deduced from Mr. Gardiner's locality (Flo. Forf.) of Canlochen rocks.

573. HIERACIUM SYLVATICUM, *Sm.*

Area general?
South limit in Devon, Isle of Wight, Kent.
North limit in Outer Hebrides, Sutherland, Aberdeen.
Estimate of provinces 18. Est. of counties 75 or 80.
Latitude 50—59. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.

Descends to the coast level, in the Peninsula.
Ascends to 850 yards, in East Highlands.
Range of mean annual temperature 50—38.

Native. Sylvestral, &c. Curiously enough, with reference to a species of Hieracium reported from every other province, I do not find any locality for that of the Lakes among my notes and compilations, although I feel a tolerably certain recollection of having seen the species there. The figure of H. maculatum in English Botany, corresponding with the specimen in Smith's herbarium, probably represents an example of H. sylvaticum with spotted leaves. More frequently, however, the maculate Hieracia belong to H. murorum. Three distinguishable forms are included under H. sylvaticum by British botanists. One of these has few leaves on the stem, unless in its luxuriant and branched state, and corresponds closely with H. maculatum, except in the absence of dark stains on the leaves. A second is the form with a long and leafy, but scarcely branched stem; and from which the third form differs chiefly by its more rigid leaves, of a darker green colour, and its less copious pubescence.

575. HIERACIUM LAWSONI, *Sm.*
574. HIERACIUM LAPEYROUSII, *Bab. Man.*

Area * * * * * * * * * 10 11 12 * 14 15 16 17 18.
South limit in York, Westmoreland.
North limit in Outer Hebrides, Sutherland.
Estimate of provinces 8. Estimate of counties 15.
Latitude 54—59. Highland type of distribution.
A. A. regions. Superagrarian—Midarctic zones.
Descends to the coast level, in North Highlands.
Ascends to 900 yards, in East Highlands.

Range of mean annual temperature 46—38.

Native. Rupestral. Apparently a species truly distinct from H. murorum, with which it was long confused; and, indeed, still is so by several botanists; nor is it easy to distinguish some of the specimens in a dried state. I have not seen H. Lapeyrousii in a fresh state, and the dried specimens appear to my eyes to come very close indeed to H. Lawsoni; which latter has not unfrequently two, and sometimes three, leaves on the stem, below the branches. Judging from the description of H. Schmidtii in Babington's Manual, this latter would seem to belong here also. H. Lapeyrousii is recorded from the banks of the Tees river, which divides the provinces of Humber and Tyne, and apparently from the superagrarian or inferarctic zone, possibly both.

HIERACIUM CERINTHOIDES, *Linn.*

Area [10 * * 13 * 15].

Incognit. Another of our opprobria among the species of its genus, the really British representatives of (or, instead of) which may perhaps be correctly referred to H. Lawsoni. Mr. Joseph Woods states that he found a single specimen of H. cerinthoides on the Yorkshire side of the Tees, near Middleton; and this statement I will believe when some other botanist shall find a second specimen. G. Don asserts it to be "not rare" in the Highlands of Scotland, and localizes it more specifically "on rocks among the Clova mountains." In Dumfriesshire, according to Boué, as quoted in New Botanist's Guide. A garden plant, kindly given to me by Mr. Borrer, is clearly different from H. Lawsoni; but was it of British origin?

576. HIERACIUM VILLOSUM, *Linn.*

Area [10 * * * * 15 16].

Incognit? There is a strong presumption in support of the true nativity of this species on and near the mountain of Loch-na-gar, in the south-west of Aberdeenshire. And yet it seems remarkable that so large a plant should escape the eyes of modern botanists. The name appears in the Flora of Yorkshire, where, contrary to the ill-conceived plan of that work, the authorities are likewise added for three several localities in this instance. One of these is the old authority of Mr. Caley, repeated in different works since the date of Withering's Arrangement; a second being that of Mr. Spruce, of small value in the question before us; a third being nothing better than a Railway guide-book. Thus, we may at once reject the species from an English list, and look to the evidence in favour of its occurrence in Scotland. Two garden specimens are preserved in Smith's herbarium, as "H. villosum," with a reference to "Ben Lawers, &c., Mr. J. Mackay;" and both these specimens appear to be very luxuriant examples of H. alpinum; a circumstance which destroys the credit-worthiness of Mr. Mackay's locality of Ben Lawers, given in English Flora. But in the same herbarium there is a specimen of true H. villosum, labelled from rocks near Loch Callater, apparently collected either by Mr. T. Drummond *or* Mr. Robertson, in 1825; but it is not made quite clear by Smith's memorandum, that the latter had given to Smith the specimen supposed to have been collected by Drummond. Another specimen is said to be preserved in Dalton's herbarium, labelled from Loch-na-gar. According to Dickson (Linn. Trans. 2) H. villosum occurs on wet rocks on Ben Nevis;

but a specimen so named in Winch's herbarium, from the "foot of Ben Nevis," is H. Lawsoni. The real question seems thus narrowed into the single one, whether Thomas Drummond, or any other botanist, ever collected the true H. villosum on Loch-na-gar, or on the rocks above Loch Callater?—or, whether H. Lawsoni was collected in those places, and cultivated, or foreign specimens of H. villosum erroneously substituted for it in herbaria? For my own part, I can place little trust upon the specimens in old herbaria, the alleged localities of which now remain unconfirmed; because botanists of the Smithian school, from a quarter to half a century ago, undoubtedly labelled garden-grown specimens as if from native localities. Indeed, within very few years past, I have known an elderly and respected botanist take a numerous series of specimens from his garden, label them from native localities, as if wild specimens, and even put dates on their labels, indicating them to have been gathered nearly thirty years before.

577. HIERACIUM AMPLEXICAULE, *Linn.*

Area (* * 3 * * * * * * * * * * * 15).

Alien. Established on the walls of Magdalen College, Oxford, and on those of Cleish Castle, Kinross. According to G. Don, it occurs on the Clova Mountains.

"HIERACIUM DIVARICATUM," *Don.*

Area [15].

Incognit. On rocks among the Clova Mountains, according to G. Don; but I know not what he intended under this name.

578. HIERACIUM DENTICULATUM, *Sm.*

Area * * * * * [6 * * * 10] * * * 14 15 16 17 18.
South limit in Selkirk, —— ?
North limit in Shetland, Sutherland, —— ?
Estimate of provinces 6. Estimate of counties 10.
Latitude 55—61. Scottish type of distribution.
Agrarian region. Superagrarian zone.
Descends to the coast level, in N. Highlands or Isles.
Ascends to 400 yards, in East Highlands.
Range of mean annual temperature 46—42.
Native. Rupestral? This appears to be simply a book species, made up from misunderstood or mistaken specimens of several others; among which may probably be reckoned boreale, rigidum, inuloides, and umbellatum. I am myself very doubtful whether Smith's species is really known to me; and from the labels of specimens communicated to me, under this name, it is quite clear that other botanists are equally at a loss about Smith's plant.

579. HIERACIUM PRENANTHOIDES, *Vill.*

Area * * * * * * * * * 10 11 12 * 14 15 16.
South limit in York, Westmoreland.
North limit in Moray, Aberdeen, Skye.
Estimate of provinces 6. Estimate of counties 12.
Latitude 54—58. Highland type of distribution.
A. A. regions. Superagrarian—Inferarctic zones.
Descends to a trifling elevation, 100 or 200 yards?
Ascends to 600 or 650 yards, in East Highlands.
Range of mean annual temperature 46—41.
Native. Rupestral, Sylvestral. Two apparent species

probably pass under this name; the one, which I suppose to be correctly so named, with very flexible, glaucous, faintly toothed leaves; the other, H. inuloides of some botanists, with more rigid leaves, often rather strongly toothed. Both of these grow near Castletown, in Braemar, as well as in other habitats reported for H. prenanthoides. I think that the English Botany figure (2235) has been taken from the species or variety with rigid leaves.

580. HIERACIUM INULOIDES, *Tausch.*

Area * [2] * * * * * * * 10 11 12 * * 15 16.
South limit in York, Cumberland.
North limit in Moray, Aberdeen, Skye.
Estimate of provinces 6. Estimate of counties 12.
Latitude 54—58. Scottish (?) type of distribution.
Agrarian region. Superagrarian zone.
Descends to 100 or 200 yards, in Lake province.
Ascends to 400 yards, in East Highlands.
Range of mean annual temperature 47—42.

Native. Rupestral, Sylvestral. The specimens which I have seen referred to this species, by their labels, are those which other botanists would label respectively with the names of rigidum, denticulatum, or prenanthoides. Of course, under such circumstances, the geographic distribution of the several species, intended under the variously applied names, must be very uncertainly ascertained. The second province is introduced into the line which shows the area, on account of Professor Balfour reporting that he found "H. inuloides" in the Isle of Wight, in 1846, which appears to have been a mistake, and one which might warrant the addition of H. boreale to the list of species labelled as inuloides.

581. HIERACIUM BOREALE, *Fries.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16.
South limit in Devon, Isle of Wight, Kent.
North limit in Banff, Aberdeen, Argyle.
Estimate of provinces 16. Estimate of counties 70.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 150 or 200 yards, in East Highlands.
Range of mean annual temperature 51—46.

Native. Sylvestral, Septal. It would appear from the habitats and localities published for this species, under name of subaudum (Smith) or boreale, that it prevails more in England than in Scotland, and finds comparatively an early northern limit. Thus, notwithstanding the name, its geographic type is rather austral or English, than boreal or Scottish, so far as Britain is concerned. And by the showing of Fries, too, it would seem to be more of a southern than a northern species in Scandinavia.

582. HIERACIUM TRIDENTATUM, *Fries.*
583. HIERACIUM RIGIDUM, *Fries.*

Area 1 2 3 * 5 * 7 * * 10 11 12 13 * 15 16 17.
South limit in Somerset, Sussex, Surrey.
North limit in Ross, Forfar, Dumbarton.
Estimate of provinces 15. Estimate of counties 50.
Latitude 50—58. British (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, or nearly so, in S. England.

Ascends to 200 (or 500?) yards, in N. England.

Range of mean annual temperature 49—46 (43?)

Native. Rupestral, &c. These were given under one name (H. rigidum) in the first edition of Babington's Manual of British Botany; but in the second edition of the same work, the name of tridentatum supplanted that of rigidum, for the more frequent and (as previously held) more typical form of H. rigidum of the first edition. Of course, it becomes now impossible to make out which of the two alleged species may be intended by botanists who record localities for "H. rigidum." Whatever may be the result of his investigations ultimately, I fear that the immediate effect of Mr. Babington's added species (or rather, added names) in our lists of British Hieracia, will be that of increasing the confusion and errors respecting their localities. It is highly probable, not to say certain, that some of Mr. Babington's novelties in this genus are really other names for Smith's species; and as the latter have been still retained, ambiguity and confusion are inevitable. Moreover, as neither the names nor the species of the second edition of the Manual correspond with those of the first edition, there is another prolific source of error and cross-naming introduced into this genus, which, like its geographically natural associate 'Salix,' has been rendered botanically odious by books.

584. HIERACIUM UMBELLATUM, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 16 17.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Sutherland, Forfar, Argyle.

Estimate of provinces 17. Estimate of counties 60.

Latitude 50—59. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 250 or 300 yards, in East Highlands.
Range of mean annual temperature 52—45.

Native. Ericetal, Septal, &c. Apparently much less frequent in Scotland than in England. I am not aware of any recorded locality in the Lake province, though probability seems in favour of including that also in the provincial estimate. The altitude is given at 250 to 300 yards, on faith of Dr. Macnab, who is reported to have collected this species in Glen Clova.

585. BORKHAUSIA FŒTIDA, *DC.*

Area * 2 3 4 * * * * * * (11).
South limit in Sussex, Kent, Surrey? Berks.
North limit in Suffolk, Norfolk? Cambridge?
Estimate of provinces 3. Estimate of counties 6.
Latitude 50—53. Germanic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Channel or Thames.
Ascends to 50 yards, more or less, in Ouse or Thames.
Range of mean annual temperature 51—48.

Native. Viatical? The counties above named, with the intermediate ones of Essex and Bucks, have been recorded to produce the present species; which is likewise said to have occurred on the ballast-hills of Durham and Northumberland. But there are strong reasons for presuming that some of the alleged localities belong really to B. taraxacifolia; as, indeed, Mr. Edward Forster has stated to be the case with that of Purfleet, in Essex, which was published in Turner and Dillwyn's Botanist's Guide, on his authority, for Crepis biennis and Crepis (Borkhausia)

fœtida. Under these circumstances, the provincial and comital census may possibly be given too high here.

586. BORKHAUSIA TARAXACIFOLIA, *DC.*

Area * * 3 * * * 7.
South limit in Kent, Surrey?
North limit in Caernarvon, ——?
Estimate of provinces 4. Estimate of counties 8.
Latitude 51—53. Germanic (?) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Thames province.
Ascends to 50 or 100 yards, in England.
Range of mean annual temperature 50—48.

Native. Viatical, &c. The remarks which have been made under Borkhausia fœtida and Crepis biennis, in reference to the species now under consideration, will show that its true distribution can only be very imperfectly indicated; several of its localities having doubtless been recorded erroneously for one of the other two plants mentioned. Mr. C. C. Babington informs me that specimens are preserved in his herbarium, collected in Caernarvonshire by Mr. J. Roberts. Mr. Forster has stated that he found it in Essex. In common with many other botanists, I have gathered examples in several localities in Kent. And in the year 1839 I found one or two plants in a meadow by the Thames towing-path, near Moulsey Lock, in Surrey; where I have sought it unsuccessfully in after years. Other habitats for the present species have still to be ascertained. Many foreign botanists write the generic name as "Barkhausia."

587. BORKHAUSIA SETOSA, *DC.*

Area (* 2 3 * * * * * 9 * * * * * 15).

Alien. Occasionally introduced with foreign seeds of the meadow clover, but is soon lost again through the rotation of agricultural crops.

588. TARAXACUM OFFICINALE, *Wigg.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Orkney, Hebrides.

Estimate of provinces 18. Estimate of counties 82.

Latitude 50—61. British type of distribution.

A. A. regions. Inferagrarian—Midarctic zones.

Descends to the coast level, in the Peninsula.

Ascends to 900 yards, in East Highlands.

Range of mean annual temperature 52—39.

Native. Pascual. Rare above the agrarian region; being usually represented by T. palustre in the arctic region. Different as these two quasi-species may be in their extreme forms, there are transition varieties of each which certainly approximate to, and yet I cannot absolutely say that they pass into, each other. If cultivated in rather dry garden ground, T. palustre does not fully change into the ordinary T. officinale, although the involucral scales do spread much and become slightly reflexed.

588, d. TARAXACUM PALUSTRE, *DC.*

Area general?
South limit in Cornwall, Isle of Wight, Sussex.
North limit in Shetland, Hebrides?
Estimate of provinces 18. Estimate of counties 70.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Superarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 1350 yards, in West Highlands.
Range of mean annual temperature 52—33.

Native. Uliginal, Inundatal. I have no certain locality for this plant in the province of Trent; but as it is reported for all the rest, and I have an indistinct recollection of seeing it in Derbyshire, the provincial generality is assumed interrogatively in giving the area. According to my own observations, it is decidedly rare in the southern counties of England; and therefore I am led to distrust some of the alleged habitats where it is stated to be common over a large tract; for example, "frequent within sixteen miles of Poole," in Dorsetshire.

589. ARNOSERIS PUSILLA, *Gaertn.*

Area 1 2 3 4 5 * * 8 * * * * * * 15.
South limit in Somerset, Dorset, Kent.
North limit in Moray, Aberdeen, Forfar.
Estimate of provinces 7. Estimate of counties 20.
Latitude 50—58. Germanic type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in Channel.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 51—47.

Native. Glareal, Agrestal. Locally abundant in some counties of the Thames and Ouse provinces; but with very few localities on record, and for single counties each, in those of the Channel, Peninsula, Severn, and Trent. It reappears in a few localities near the coasts of the East Highlands; namely, in Moray and Aberdeen, under suspicion of having been introduced to those two counties; also, in Forfarshire, under circumstances which give greater probability of its being truly indigenous there. Mr. G. Don states, with reference to the lower parts of Forfarshire, that "when any muir ground is broken up, although there is no symptom of its having been ever ploughed, this plant never fails to make its appearance the first year; but after the field has been cultivated for some time it begins to disappear." This observation holds good if applied to wastes in some of the sandy tracts in Surrey; but diligent search on neighbouring ground, still left unworked, will discover usually some few very diminutive examples of the species. The Arnoseris is scarcely a plant of the superagrarian zone, although the low district of Moray may be considered just within that zone of vegetation.

590. LAPSANA COMMUNIS, *Linn.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Orkney, Hebrides, Ross.

Estimate of provinces 18. Estimate of counties 81.

Latitude 50—60. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zone.

Descends to the coast level, in the Peninsula.

Ascends to 400 yards, in E. Highlands (Dickie).

Range of mean annual temperature 52—43.

Native. Viatical, Agrestal, &c. I have not ventured to give the highest county census for this usually very common species, because it remains unrecorded in the Shetland Flora, and I do not find the name in my own lists of plants observed in Sutherland and Caithness. Still, after excluding Shetland, the presumption appears to be considerably in favour of its comital generality in Britain; particularly so as we find it attaining Lapland and Finland on the Continent; although not recorded from Faroe. I have seen it at 350 yards of altitude in Aberdeenshire, and Dr. Dickie says at 400 yards in the same county. Possibly we may both refer to the same locality, that of the cultivated fields between Castletown and the Dee; as Dr. Dickie appears often to calculate the altitudes of places somewhat greater or higher than my own reckonings and estimates would make them.

591. Cichorium Intybus, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Moray, Aberdeen, Dumbarton.

Estimate of provinces 16. Estimate of counties 70.

Latitude 50—58. English type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 52—47.

Native. Viatical, Agrestal. This frequent English plant becomes so infrequent in Scotland, that doubts have been expressed whether it is really indigenous in any part of

North Britain; and especially beyond the Grampians, where its localities are few and suspicious. On this account its type of distribution is set down as English, notwithstanding the high northern latitude indicated.

592. ARCTIUM LAPPA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 150 yards, in East Highlands.
Range of mean annual temperature 52—45.
Native. Viatical. I do not find the name of this species in any of my lists of plants seen in the Highland valleys, with the exception of one for the neighbourhood of Killin, in Perthshire.

592, b. ARCTIUM BARDANA, *Willd.*

Area general?
South limit in Devon, Isle of Wight, Kent.
North limit in Hebrides, —— ?
Estimate of provinces 18. Estimate of counties 70.
Latitude 50—59. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—46.

Native. Viatical. Many of our writers on local botany, and my own earlier lists made in different places, do not distinguish between the Lappa and Bardana. In consequence, where only one of these alleged species is mentioned I am forced to assume that it is the former; and thus cannot even make certain that the Bardana does occur at all in some of the provinces, although probability induces me to indicate a provincial generality, not extended also to counties. Devon is named in the south limit, as with several other common plants, because I find no express note or record of the present species having been observed in Cornwall, while, in all likelihood, I have myself seen it there.

593. SAUSSUREA ALPINA, *DC.*

Area * * * * * * 7 * [9] * * 12 13 * 15 16 17 18.
South limit in Caernarvon, Cumberland, Dumfries.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 7. Estimate of counties 15 or 20.
Latitude 53—61. Highland type of distribution.
Arctic region. Inferarctic—Superarctic zones.
Descends to 700 yards, or lower, in East Highlands.
Ascends to 1300 yards, in same province.
Range of mean annual temperature 41—34.

Native. Rupestral. The occurrence of this plant in the West Lowland province, without its extension also into those of Tyne and Humber, although found in North Wales and the Lake province, offers an exception to the general rule or characteristic distribution of the Highland and exclusively arctic plants. Generally, when the plants of the Highland type do occur in any of the more southern provinces, the following series will represent the probability

of their occurrence; namely, North Wales, Lakes, Humber or Tyne, West or East Lowlands, South Wales. The Saussurea has been reported to grow "in Brearcliff, near Burnley;" which Mr. Leyland deems to be a very unlikely habitat, and where the plant has been unsuccessfully sought.

594. SERRATULA TINCTORIA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 * * * * [18].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Lanark, Northumberland.
Estimate of provinces 12. Estimate of counties 50.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Sylvestral. The Lake province has not been reckoned in the estimate, because so conspicuous a plant seems not very likely to have been overlooked by botanical tourists there; although the occurrence of the Serratula in the adjacent provinces, Tyne and West Lowlands, would otherwise create a presumption in favour of the Lake province also. It may possibly rise to the superagrarian zone in the North of England.

595. CARDUUS NUTANS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 (15) * * [18].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Haddington, Edinburgh, Lanark.

Estimate of provinces 14. Estimate of counties 50.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Viatical, Pascual. Pretty frequent in the southern provinces, especially on the chalk and limestone soils; becoming scarce in the northern provinces of England, and rare in Scotland. I am aware of only one recorded locality in the West Lowlands (Flo. Lan.), and two neighbouring localities in the East Highlands, both in Moray, to which the Rev. G. Gordon (Coll. Mor.) thinks the species may have been introduced. And as there appears to be a wide tract intervening between those two northerly localities and the nearest others, about the Firth of Forth, it has seemed better to consider the latter as constituting the natural limit northward; and yet a doubt might still plausibly be raised, whether the species be truly native in any part of Scotland. Dr. J. D. Hooker tells me (Lre. Oct. 1846) that our usual C. nutans is not the plant of South Europe, so called, but the C. onopordioides of Fischer, a species of the Caucasian district only; the true C. nutans, however, having been found at Exmouth, in Devon. I am unacquainted with C. onopordioides, but cannot detect any specific difference between the C. nutans of Surrey and specimens obtained from the coasts of the Mediterranean.

596. CARDUUS ACANTHOIDES, *Linn.*

Area 1 2 3 4 5 6 7 8 * 10 11 12 13 14 15 16 * 18.
South limit in Cornwall, Isle of Wight, Kent.

North limit in Orkney? Moray, Dumbarton.
Estimate of provinces 17. Estimate of counties 70.
Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 yards, in East Highlands.
Range of mean annual temperature 52—43.

Native. Viatical. Not unlikely that the present species may be found in all the provinces, though I have as yet no locality for either of the two Northern provinces, excepting one rather unsatisfactorily reported for Orkney. In his Tour in Orkney, Dr. Neill observes that the Carduus crispus of Barry's History is only another name for C. acanthoides; but it does not clearly appear that Dr. Neill saw any example of the species so designated, while in the Orkney Isles. Proceeding southward, the next mention of the plant occurs in the 'Collectanea for a Flora of Moray,' where Gordon gives four localities, with some distrust of its nativity in the county. It is stated to be "not common" about Aberdeen, and "not uncommon" in Forfarshire. Established or indigenous at Castletown, in Braemar, where I observed it in 1832 and 1844.

597. CARDUUS TENUIFLORUS, *Curt.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Forfar, Fife, near Glasgow.
Estimate of provinces 15. Estimate of counties 60.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 52—47.

Native. Viatical. The Flora Glottiana includes in its area some small portions of both West and East Highlands, in the counties of Dumbarton and Stirling, along with the West Lowland counties of Renfrew and Lanark; and I am uncertain whether to consider this species as occurring on the Highland side of the Clyde, or as restricted to the Lowland province.

598. CARDUUS MARIANUS, *Linn.*

Area 1 2 3 4 5 6 7 8 * 10 11 12 * 14 15 * (17).
South limit in Cornwall, Isle of Wight, Kent.
North limit in Aberdeen, —— ?
Estimate of provinces 13. Estimate of counties 40.
Latitude 50—58. English (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Denizen. Viatical. If I had followed here the inferences suggested by the habitats in which I have myself enjoyed the opportunity of seeing this species, it would have been ranked in the category of 'Aliens.' But when I find it treated as an unquestioned native in the works of Hooker, Henslow, Babington, and also by many Authors of local Floras, I feel compelled to place it in the distrusted instead of the rejected rank. The name is marked by the Rev. G. Gordon, in a list of British plants, checked off for the counties of Ross and Cromarty; but in the 'Collectanea,' by the same botanist, the species is enumerated as one "certainly introduced" into Moray. It is unchallenged in the Floras of Aberdeen and Forfarshire, and in

several of the local Floras for English counties. Apparently, however, it becomes less frequent and more suspected in the western provinces; remaining quite unrecorded for three of them, as far as my collections of localities can show the published records, and probably few have escaped my search.

599. CARDUUS LANCEOLATUS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 550 yards, in East Highlands.
Range of mean annual temperature 52—41.
Native. Viatical, Pascual. Infrequent above the agrarian region. This should be the true Scottish Thistle, if any one species in particular is to be so considered.

600. CARDUUS ERIOPHORUS, *Linn.*

Area 1 2 3 4 5 6 * 8 9 10 11 [12 * (14 15) 16].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Durham, Lancaster. (Fife? Argyle?).
Estimate of provinces 10. Estimate of counties 30.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 52—47.

Native. Viatical, Pascual. In most of the English counties, on chalk or limestone, and near the coast. The more northerly provinces are to be distrusted; mostly resting on reports of single localities, not confirmed by any second or sufficiently competent botanist. It is probably not an unusual mistake, to apply the name of this species to examples of C. lanceolatus.

601. CARDUUS PALUSTRIS, *Linn.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Hebrides, Orkney?

Estimate of provinces 18. Estimate of counties 82.

Latitude 50—61. British type of distribution.

A. A. regions. Inferagrarian—Midarctic zones.

Descends to the coast level, in the Peninsula.

Ascends to 800 yards, in East Highlands.

Range of mean annual temperature 52—38.

Native. Pratal, Inundatal, &c. Apparently omitted from Barry's History of Orkney (which I quote only second-hand), but is it not more likely to be the "C. crispus" of that work, than is the latter to be intended for C. acanthoides, to which Dr. Neill refers the species mentioned by Barry or Lowe, under name of C. crispus? Not infrequent in the inferarctic zone, but probably rare in the midarctic.

602, CARDUUS ARVENSIS, *Curt.*
602, b. CARDUUS SETOSUS.

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 450 yards, in East Highlands.
Range of mean annual temperature 52—42.

Native. Agrestal, Viatical, &c. Has probably been carried to the altitude indicated, by the upward progress of habitation and cultivation. Carduus (Cirsium) setosus has occurred near Culross, in Fife, apparently plentiful and during some successive years; but whether a native variety, or one introduced to that very "infected" county, I am unprepared to say. Mr. Babington (Man. Brit. Bot.) mentions a variety "latifolius," which he queries may be a distinct species, found in Derbyshire.

603. CARDUUS FORSTERI, *Bab.*

Area * 2 3 * [5].
South limit in Sussex, Isle of Wight?
North limit in Surrey? Stafford?
Estimate of provinces 2. Estimate of counties 2.
Latitude 51—52. Local type of distribution.
Agrarian region. Inferagrarian zone.
Descends to 50 or 100 yards.

Ascends to 50 or 100 yards.

Range of mean annual temperature 49—48.

Native. Pratal, &c. An obscure or puzzling species, by some botanists supposed to be a hybrid form between C. pratensis and C. palustris. Represented in some, perhaps in most, herbaria, by luxuriant forms of C. pratensis, which on this account have been recorded in the 'London Catalogue of British Plants,' under name of Pseudo-Forsteri, placed as a variety of C. pratensis. In Garner's Natural History of Staffordshire, the habitat of "Burton, Mr. Brown" is recorded for C. Forsteri; and the name is checked by Dr. Bromfield in a list of British plants marked for the Isle of Wight, probably on the authority of Rev. G. E. Smith. (See Phytologist, iii. 501). I have not seen specimens from either habitat; but if true C. Forsteri occurs in them, these constitute the north, south, and west limits, so far as ascertained. Mr. J. S. Mill has recorded (Phytologist, i. p. 61) that he saw C. Forsteri "growing by hundreds in a piece of marshy ground formerly part of Ditton Common; at least it was the plant I previously found near Weybridge and sent to Sir William Hooker." The Ditton locality, as mentioned by Mr. Mill, is familiar to me; and I can say confidently that it is the luxuriant form of C. pratensis (var. pseudo-Forsteri) which grows there. A specimen is in my herbarium, given to me several years ago by Sir William Hooker, labelled from near Weybridge, which is also C. pratensis. But the plant which is considered to be true C. Forsteri, by the Rev. W. H. Coleman and myself, has occurred in Surrey; a single root having been found by myself in a field by Whitmoor Pond, near Guildford, where I then and subsequently sought in vain for a second. Mr. Coleman has found a very similar plant "in the Gargle Wood, and in an adjoining pasture called the Gargle West Field, on the farm

of Mays, three miles south of East Grinstead, in Sussex;" a locality not very distant from the original one, "Frant, near Tunbridge Wells." Mr. Borrer has reported C. Forsteri (Hook. Brit. Flo. 5) from Ditchling Common, in the same county of Sussex. Last year (1848) Mr. Borrer kindly sent me a living plant from his garden, as C. Forsteri, which differs considerably in its leaves from the plants so named by Mr. Coleman and myself; but they are decurrent a short way below their insertion on the stem, and thus present one of the two chief characters which distinguish C. Forsteri from C. pratensis; the stoloniferous root giving the other character to the latter.

604. CARDUUS PRATENSIS, *Huds.*

Area 1 2 3 4 5 6 * 8 * 10 [11 * * * * 16].
South limit in Devon, Isle of Wight, Kent.
North limit in York, Stafford, Salop.
Estimate of provinces 8. Estimate of counties 30.
Latitude 50—54 or 55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—48.

Native. Uliginal, Paludal. Said to have been found in Islay and Arran, Scotland, and in Durham and Northumberland; but the alleged localities remain apparently unconfirmed by trustworthy observers of the present time, and were originally uncertain, or reported on unsafe authority. Probably the southern limit is in Cornwall, though I have no note of any locality in that county; and, indeed, as the species appears to be more eastern than western

in its distribution, there is some chance that Cornwall may be really without this species.

605. CARDUUS TUBEROSUS, *Linn.*
CARDUUS WOODWARDII, *Mss.*

Area * 2 * * * 6.
South limit in Wiltshire.
North limit in Glamorgan.
Estimate of provinces 2. Estimate of counties 2.
Latitude 51—52. English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to —— ?
Ascends to —— ? (Altitude trifling.)
Range of mean annual temperature, say 49—48.

Native. Pratal or Sylvatical? This very local species, found by so few English botanists, has been long recorded for the single county of Wilts; and Mr. C. C. Babington informs me that he has a specimen from the original locality, near Boyton, gathered by the Rev. J. Downes. In the first volume of the Phytologist, p. 780, Mr. Westcombe published a second habitat, "between St. Donat's and Dunraven, Glamorganshire." These are the only two localities, of which I am aware, recorded expressly for C. tuberosus. But last year I was indebted to Mr. S. P. Woodward for a set of puzzling specimens, which that gentleman first conceived to belong to C. Forsteri, and afterwards thought that they might be very luxuriant examples of C. pratensis and C. acaulis. For my own part, I still hesitate between adopting the opinion of Mr. Woodward or referring the specimens to C. tuberosus; and in this uncertainty, they are temporarily distinguished by the name of their discoverer and collector. The habitat is thus given by Mr.

Woodward: "in a piece of ground, sown with 'seeds,' broken up only a few years ago, on the farm of Mr. Thomas Arkell, at Penhill, in the parish of Stratton St. Margaret's, two miles from Swindon, in the year 1848."

606. CARDUUS ACAULIS, *Linn.*
606, b. CARDUUS DUBIUS, *Willd.*

Area 1 2 3 4 5 6 * 8 * * [11 12].
South limit in Devon, Isle of Wight, Kent.
North limit in Notts, Hereford, Glamorgan.
Estimate of provinces 7. Estimate of counties 25.
Latitude 50—54. Germanic (?) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to 150 or 200 yards, in England.
Range of mean annual temperature 51—48.

Native. Glareal, Pascual. Extends pretty far westward, for a species referred to the Germanic or South-eastern type. If we add to the counties indicated for its northern, or rather north-western limit, those of Somerset and (South-eastern) Devon, we shall obtain a stronger indication of eastern tendency, than that given by the provincial area of the plant might at first appear to imply. Moreover, as we approach towards the western line so traced out, the special localities appear also to become less frequent; only two being reported for Devon, one for Glamorgan, one for Hereford. The remarkable variety, or very luxuriant variation, named 'Gibsoni' in the London Catalogue, after its discoverer, is referred to C. dubius in Babington's Manual: only two plants of it were found.

607. CARDUUS HETEROPHYLLUS, *Linn.*

Area * * [3 4] 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Glamorgan? Stafford, Derby.
North limit in Sutherland, Skye, Ross, Aberdeen.
Estimate of provinces 13. Estimate of counties 30.
Latitude 51—59. Scottish type of distribution.
A. A. regions. Midagrarian—Inferarctic zones.
Descends to the coast level, in West Highlands.
Ascends to 700 yards, in East Highlands.
Range of mean annual temperature 47 (48)—39.

Native. Pratal, Paludal. Has been recorded (B. G. &c.) to grow in Surrey, Middlesex, Norfolk,—counties far to the south-east of those which are above indicated for the southern limit of the species in Britain. The two first have been reported in all likelihood through mistaking specimens of Carduus pratensis for the present species. The counties of Norfolk and Glamorgan may be considered to require confirmation on more recent authority, although the latter county seems sufficiently probable to justify its admission at present. It is worthy of note that this boreal species, too conspicuous to be easily overlooked, should not have been observed in the province of North Isles; nor does it occur in the list of Faroe plants.

CARDUUS OLERACEUS, *Pers.*

Area [8].

Incognit. "I possess a specimen of the plant gathered as wild in Lincolnshire, by the late Mr. Cole, of Bourne, about 1823. The plant was then to be observed by the

side of the road between Market Deeping and Croyland." (Edward Edwards, in Phytologist, ii. 115.) By no means an unlikely species to occur in Lincolnshire; but unless re-discovered in England, it can scarcely be admitted as a known native. The above notice was elicited from Mr. Edwards by a previous one from Dr. Bromfield, to nearly the same effect, though with rather less direct or satisfactory evidence. (See Phytologist, ii. 53.)

608. ONOPORDUM ACANTHIUM, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 (13) 14 15 * * (18).
South limit in Somerset, Dorset, Hants, Kent.
North limit in Fife, Haddington, (Lanark).
Estimate of provinces 14. Estimate of counties 30 or 40.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native? Viatical. Perhaps indigenous in the South of England, and gradually extended northward by the agency of mankind. Several authors on local botany treat this as a dubious native; but it is admitted without challenge into the Catalogue of Forth plants, by the Botanical Society of Edinburgh. By admitting all the counties in which the Onopordum is found, however distrusted as a native, we may raise the comital census up to 40, but 30 would likely be the full number which ought to be reckoned for it. Formerly, possibly still, found in the Isle of Wight.

609. CARLINA VULGARIS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Kincardine, Isle of Arran.
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—58. English type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level (?), in the Peninsula.
Ascends to 250 yards, in Lake province.
Range of mean annual temperature 52—46.

Native. Glareal, Pascual. Infrequent, but not scarce in England, and found in some few of the Scottish counties, chiefly along their coast line. The Rev. G. Gordon intimates that it has been discovered in Moray, by Dr. Innes, since the 'Collectanea' was printed, though rather questioning its real nativity there. Along the coast of Kincardine and Forfar there are scattered localities, from which the step to Moray is not very wide.

CARLINA RACEMOSA, *Linn.*

Hibernian. Mr. Andrews found a (single ?) specimen of this plant, growing with C. vulgaris, in the Isle of Arran, Ireland. (See London Journal of Botany, iv. 570.)

† CENTAUREA MONTANA, *Linn.*

Area (5 * * * * 10).
Alien. In the Natural History of the county of Stafford,

Dr. Garner records this species as growing "in a high pasture near Gradbitch." Many years ago, Mr. James Ward favoured me with specimens from the neighbourhood of Richmond, in Yorkshire. It has been long and much grown in gardens as an ornamental plant.

CENTAUREA JACEA, *Linn.*

Area [* 2 3 * 5 * * * * 10 11 * 13 * 15].

Incognit or Alien. Unless there occurred some mistake between one plant and another in the garden of Mr. Borrer, it would seem that a solitary example of the present species had actually been found in a meadow near Henfield, in Sussex. And it has been picked near Belfast, Ireland. All the other recorded localities probably belong to C. nigrescens or some radiate form of C. nigra. According to the Summa Vegetabilium, by Fries, C. Jacea would appear to be generally distributed through Scandinavia, with the exception of Lapland; while, on the contrary, C. nigra is extremely local. This being quite the opposite of their distribution in the British Isles, it may be surmised that there is some misapprehension about the true C. nigra either in Britain or Sweden.

610. CENTAUREA NIGRESCENS, *Willd.*

Area 1 2 3 * 5 6 * 8 * 10 11 * 13 * 15.
South limit in Cornwall, Isle of Wight, ——?
North limit in Banff? Forfar? Kirkcudbright?
Estimate of provinces 12. Estimate of counties 25.
Latitude 50—58. English type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 52—47.

Native. Pascual, Septal. A very doubtful species; the distribution of which, as above indicated, is equally uncertain. The formula has been filled up from a consideration of the localities published for C. Jacea, C. nigrescens, and C. nigra *var.* radiata. But, first, it is very dubious whether there really is any species distinct from C. nigra, to answer to the name of C. nigrescens; and, secondly, assuming that such a real species does exist in nature, I find myself unable to decide which of the various recorded localities belong strictly to C. nigrescens, and which of them belong only to C. nigra; or, it may be, to C. Jacea, in some instances.

611. CENTAUREA NIGRA, *Linn.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Orkney, Hebrides.

Estimate of provinces 18. Estimate of counties 82.

Latitude 50—61. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 400 or 450 yards, in East Highlands.

Range of mean annual temperature 52—42.

Native. Pascual. See a remark respecting this species under the head of C. Jacea.

612. CENTAUREA CYANUS, *Linn.*

Area general?

South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland? Orkney, Sutherland.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 450 yards, in East Highlands (Dickie).
Range of mean annual temperature 51—42.

Colonist. Agrestal. It may seem rather sceptical to avoid the native designation in case of a plant so commonly observed as the present species; and yet it is one of the best examples I could mention, of the class of plants apparently indigenous, and which are nevertheless found only in connexion with agriculture. Would not this, like many other such species, wholly disappear from Britain, in the impossible event of agriculture being abandoned? I have seen the Cyanus about Castletown, Aberdeenshire, and Dr. Dickie says that it occurs up to 1386 feet in that county.

613. CENTAUREA SCABIOSA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Aberdeen, near Glasgow.
Estimate of provinces 15. Estimate of counties 60.
Latitude 50—57 (58). English (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Agrestal, Septal. Rather frequent in England; much less so in Scotland; and scarcely entitled to be held indigenous farther northward than the south-eastern parts of Perth and Forfar. If deemed native in Moray, it will

extend just within the superagrarian zone, and make a nearer approach to the British type of distribution.

† CENTAUREA INTYBACEA, *Willd.*

Area [15].

Incognit. In the fields by the shore in several places, in Forfarshire, according to Mr. George Don; who adds an opinion, that it must have been confounded with C. Scabiosa, which it very much resembles. (Stat. Acc. Forf.) It seems likely that Don may have given the above name to the pale-flowered variety of C. Scabiosa, mentioned in Gardiner's Flora of Forfarshire; the resemblance between the two species not being such as to render their confusion very probable.

614. CENTAUREA ISNARDI, *Linn.*

Sarnian. Found in the Isle of Guernsey, and said to differ very little (Bab. Man. ed. 2) from C. aspera; to which latter, indeed, Dr. J. D. Hooker referred the Guernsey plant in a letter received from him, in October, 1846.

615. CENTAUREA CALCITRAPA, *Linn.*

Area 1 2 3 4 * * * * * (10 11).
South limit in Devon, Hants, Sussex, Kent.
North limit in Norfolk, Cambridge, (York?).
Estimate of provinces 4. Estimate of counties 12.
Latitude 50—53 (55). Germanic type of distribution.
Agrarian region. Inferagrarian zone.

Descends to the coast level, in the Peninsula.

Ascends to 50 yards, more or less, in England.

Range of mean annual temperature 52—48.

Native. Viatical. Chiefly about the south-eastern coast of England; but said also to occur very locally in two of the western counties, Devon and Somerset. The locality of Sandsend, near Whitby (Flo. York), will require verification by a botanist, though not an improbable habitat. The localities still more northerly, in the province of Tyne, are only those of the ballast hills, to which the species has doubtless been introduced by shipping. Said to have occurred in the Isle of Wight, though not found by Dr. Bromfield at the present time.

616. CENTAUREA SOLSTITIALIS, *Linn.*

Area (* 2 3 4 5 * 7) * * [10].

Alien. Occasionally found among clover, lucerne, or saintfoin, introduced with the foreign seeds; and also sometimes by roads and other places near the coast. A. Aiken is said to have found it in "dry pastures about Frystone," Yorkshire. (B. G.)

CALENDULA ARVENSIS, *Linn.*

Area (11).

Alien. "Naturalized on Sunderland ballast hills, Durham,—W. Weighell's Herb. Scarcely entitled to a place in an English Flora, though admitted by the late Dr. Withering."—(Winch's Flora of Northumberland and Durham). Perhaps the term "Incognit" might have better applied to the present species, which does not appear

to have become permanently naturalized on the ballast hills.

617. BIDENS CERNUA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Kincardine, Argyle.
Estimate of provinces 16. Estimate of counties 70.
Latitude 50—58. British (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.
Native. Paludal. Scarcely general enough to be referred to the British type, yet almost too general to belong properly to the English type. My only localities in the West Highland province are in the South of Dumbartonshire (Flo. Glott.) and in Cantire (Prof. Balfour); and apparently it occurs in very few places in the East Highlands.

618. BIDENS TRIPARTITA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 * 16.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Islay, about Glasgow and Edinburgh.
Estimate of provinces 15. Estimate of counties 60.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Paludal, Inundatal. According to the localities on record, it would appear that this species finds an earlier northern limit than B. cernua, at least on the eastern side of Scotland. The present is omitted from the Floras of Moray, Aberdeen, Forfar, Edinburgh, and Berwick, that is, all the eastern Floras. By the Flora Glottiana, however, it would seem that B. tripartita occurs more frequently about Glasgow; and while Professor Balfour mentions Cantire only for B. cernua, he names Arran, Cantire, and Islay, for B. tripartita. According to the Catalogue printed for the Botanical Society of Edinburgh, both the species do occur about the Firth of Forth; and they are marked as equally rare. Probably the names are occasionally misapplied; the leaves varying much in form and division.

619. EUPATORIUM CANNABINUM, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Sutherland, Ross, Moray, Argyle.
Estimate of provinces 17. Estimate of counties 75.
Latitude 50—59. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—46.

Native. Paludal, Inundatal, &c. Most frequently seen along the banks of streams, or in hedges by water; and no term has been adopted for expressing the river-bank preference, because very few (if any) plants appear restricted to such situations. The river-bank plants, indeed, are intermediate between the paludal and inundatal; being more or less flooded in the winter season, although the water may

retire from them by its summer level, still leaving the roots in damp if not humid ground.

620. CHRYSOCOMA LINOSYRIS, *Linn.*

Area 1 [2] * * * * 7.
South limit in Devon. [Dorset? Sussex?]
North limit in Caernarvon.
Estimate of provinces 2. Estimate of counties 3.
Latitude 50—54. Atlantic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to a slight elevation.
Range of mean annual temperature 52—49.

Native. Rupestral. Berry Head, in Devon, Worle Hill, in Somerset, and Ormes Head, in Caernarvonshire, are the known and certain localities; unless it may have lately become extinct in the second habitat, where it was sought unsuccessfully by Dr. J. D. Hooker, about 1846. A specimen was brought to the Rev. A. Bloxam, by a lady who had found it on Portland Isle; and a single plant of it was found by Sir W. C. Trevelyan, in 1825, between Brighton and Shoreham.

621. DIOTIS MARITIMA, *Cass.*

Area 1 2 3 4 * * 7.
South limit in Cornwall? Devon? Dorset? Kent?
North limit in Suffolk, Anglesea.
Estimate of provinces 3. Estimate of counties 4.
Latitude 51—54. English type of distribution.
Agrarian region. Inferagrarian zone.

Descends to the coast level, in Thames or Ouse.

Ascends, at the coast level, to N. Wales.?

Range of mean annual temperature 50—49.

Native. Littoral. This plant appears to be gradually becoming extinct in England. It is still to be found in Suffolk; and may yet exist, in diminished quantity, in Anglesea. Along the southern coast it is nearly or quite extinct; while there appears no sufficient reason for denying its former existence in the counties above mentioned interrogatively for the southern limit.

622. TANACETUM VULGARE, *Linn.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Orkney, Hebrides.

Estimate of provinces 18. Estimate of counties 75.

Latitude 50—61. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 400 yards, in E. Highlands (Dickie).

Range of mean annual temperature 52—42.

Native. Viatical. Introduced into many of its localities, especially in the more northerly provinces, and very likely carried by some cultivator to the considerable elevation indicated for it by Dr. Dickie. I am quite unable to distinguish between the natural and the artificial localities, according to published records, and am thus compelled to treat this plant as native throughout Britain. Since it is said to grow in Faroe and all over Scandinavia, the climate and area of all Britain, below the arctic zones, would appear within the natural range of the Tanacetum.

623. ARTEMISIA CAMPESTRIS, *Linn.*

Area [1] * * 4 * * * * * [10] (11).
South limit in Suffolk.
North limit in Norfolk.
Estimate of provinces 1. Estimate of counties 2.
Latitude 52—53. Germanic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, or nearly so, in Ouse.
Ascends to 50 yards, more or less.
Range of mean annual temperature 49—48.

Native. Ericetal. Almost peculiar to a small tract of country in the North-west of Suffolk and adjacent portion of Norfolk. It has occurred also on Hebburn ballast-hills, by the Tyne, doubtless introduced. Mr. Moore reports it from "Ganton, near Scarborough," in Yorkshire, on authority of Mr. H. Ibbotson; and Mr. R. Jordan (Phytologist, i. 828) has stated that it grows on the banks of the Teign, in the neighbourhood of Teignmouth, in Devon. These two latter habitats will require confirmation; though that on the Yorkshire coast does not appear improbable in itself. Too local to belong clearly to any certain type of distribution, though its narrow area lies clearly in the Germanic or eastern portion of England.

624. ARTEMISIA MARITIMA, *Linn.*
624, b. ARTEMISIA GALLICA, *Willd.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15.
South limit in Devon, Isle of Wight, Kent.
North limit in Forfar, Haddington, Wigton

Estimate of provinces 15. Estimate of counties 30.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends, at the coast level, to East Highlands.
Range of mean annual temperature 52—48.
Native. Littoral. Apparently rare on the coast of Scotland, and not very frequent on that of England.

625. ARTEMISIA ABSINTHIUM, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 * 14 15 * * [18].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Forfar? Fife, Isle of Man.
Estimate of provinces 14. Estimate of counties 50.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—48.
Native. Viatical. Chiefly near the coast, and probably introduced to some of its inland habitats. Edmondston includes it in his Shetland Flora, with a single locality; and one only is mentioned in the Flora of Forfarshire. It appears to be indigenous on the coasts of the Firth of Forth.

626. ARTEMISIA VULGARIS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.

Latitude 50—61. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 450 yards, in East Highlands (Dickie).

Range of mean annual temperature 52—42.

Native. Septal, Viatical, &c. Truly entitled to its specific name by the distribution in our island. I have seen it up to 400 yards; and Dr. Dickie says, up to 1386 feet in Aberdeenshire.

ARTEMISIA CÆRULESCENS, *Linn.*

Area [2 * * * * * 8].

Incognit. Said to have been found in the Isle of Wight, and at Portsmouth; also near Boston, in Lincolnshire; but probably all three were erroneous. See Dr. Bromfield's remarks on the plant, in Phytologist, iii. 491.

627. GNAPHALIUM DIOICUM, *Linn.*

Area 1 [2] 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18.

South limit in Cornwall, Oxon, Herts. [Dorset?]

North limit in Shetland, Orkney, Hebrides.

Estimate of provinces 17. Estimate of counties 60.

Latitude 50—61. Scottish type of distribution.

A. A. regions. Inferagrarian—Superarctic zones.

Descends nearly to the coast level, in the Peninsula.

Ascends to 950 yards, in East Highlands.

Range of mean annual temperature 51—37.

Native. Ericetal, Pascual. In looking at the line of figures which indicate the 'Area' of the present species, it might appear too general to be correctly referred to the

Scottish, instead of the British type. But its rarity in the first four or five provinces of England, amounting to almost total absence from the three first of them, taken in contrast against its frequency in Scotland, seems clearly indicative of the boreal type of distribution. Dr. Salter says that it occurs within thirty, though not within sixteen miles of Poole, in Dorset, which is my only habitat for the Channel province. I have seen it sparingly in one spot in Cornwall; and single localities are recorded in the Floras of Oxford and Herts. Several are on record for the provinces of Ouse, Severn, and South Wales. Rare above the midarctic zone, but attaining 2800 feet on Ben Hope, in Sutherland. Also attains 2900 feet on the Grampians.

628. GNAPHALIUM MARGARITACEUM, *Linn.*

Area * * [3 4] 5 6 * * * (10 * 12 * 14 * 16).
South limit in West Gloucester, Monmouth, Glamorgan.
North limit in Caermarthen, Brecon, Stafford?
Estimate of provinces 2. Estimate of counties 5.
Latitude 51—52. Atlantic (?) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to ——?
Ascends to ——? (Altitude trifling).
Range of mean annual temperature, say 48.

Denizen. Pascual? A very dubious native, which is said to have been found, "perhaps not wild," near Bocking, in Essex, in the time of Ray; also reported from Norfolk, though apparently through some error (B. G.) Turning to the western side of the island, we find it recorded in much more certain terms for the provinces of Severn and South Wales; where, if at all, it is more likely to be wild. Mr. C. C. Babington writes: "I am told and believe that

the plant is certainly native in South Wales and Monmouthshire." On the contrary, Dr. J. D. Hooker writes to me thus: "Mr. Brown tells me that Gnaphalium margaritaceum is alluded to by Clusius, as being introduced in his time from America." Mr. Petermann informs me that it thrives in the garden at Carour, West Highlands, at an elevation of 1740 feet.

629. GNAPHALIUM LUTEO-ALBUM, *Linn.*

Area (2 * 4 * * * * 9).

Alien. Almost better deserving the designation of 'Incognit.' Blackstone is quoted in the Botanist's Guide, as having recorded its occurrence a mile above the first of Bognor Rocks; where, according to Cooper's Botany of Sussex, it could not be found by Mr. Borrer. In English Flora, the Rev. R. Relhan is cited for its occurrence between Hauxton and Little Shelford, "indubitably wild;" but no such strong conviction is expressed by Relhan in Flora Cantabrigensis, and in Henslow's Catalogue it is marked as a species which ought to be expunged from our Floras. According to the British Flora, it occurs in fields at Larlingford, in Norfolk. The Flora of Liverpool intimates that it occurs on the site of the Old Botanic Garden of that town.

630. GNAPHALIUM SYLVATICUM, *Linn.*
GNAPHALIUM RECTUM, *Sm.*
GNAPHALIUM NORVEGICUM, *Retz.*

Area general.

South limit in Devon, Isle of Wight? Kent.

North limit in Orkney, Sutherland.

Estimate of provinces 18. Estimate of counties 75.

Latitude 50—60. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in Channel province.

Ascends to 500 or 550 yards, in East Highlands.

Range of mean annual temperature 51—41.

Native. Ericetal, Pascual. Apparently very rare in the Peninsula, for which I find only one locality on record; namely, in Devon. At the opposite extremity of Britain, or the province of the North Isles, two or three localities are known in one of the groups; namely, in Orkney. In 1848, Mr. C. C. Babington wrote me to this effect: "I never saw specimens of Gnaphalium norvegicum, as I now find, before receiving some good ones from 'a lofty craig at the head of Canlochen Glen, above Glen Isla, Forfarshire,'—Mr. James Backhouse." The habitat thus indicated would carry the species up to 800 or 900 yards, and into the mid-arctic zone, in the East Highland province; unless the G. norvegicum should be geographically treated apart from G. sylvaticum. A specimen is preserved in my herbarium, collected in Glen Isla, in 1834, by Mr. Brand, which I presume to be the G. norvegicum; but which appears so linked to the G. sylvaticum or rectum of English botanists, by intermediate forms, as to render discrimination very difficult and unsatisfactory. A doubt is attached to the existence of Gnaphalium sylvaticum or rectum in the Isle of Wight; Dr. Bromfield having been unable to find it in the locality where Mr. Joseph Woods reported it as being frequent.

631. GNAPHALIUM SUPINUM, *Linn.*

Area * * * * * * * * * * * * * * * 15 16 17 18.
South limit in Fife (Ochills), Stirling, Dumbarton.
North limit in Orkney, Sutherland.
Estimate of provinces 4. Estimate of counties 15.
Latitude 56—60. Highland type of distribution.
Arctic region. Inferarctic—Superarctic zones.
Descends to 500 or 450 yards, in East Highlands.
Ascends to 1400 or 1450 yards, in same province.
Range of mean annual temperature 42—33.

Native. Ericetal. Recorded from twelve counties of the Highlands; and the name is likewise marked in a list of British plants checked off for Orkney by the Rev. C. Clouston. Kincardine and Caithness, with Shetland and the Hebrides, remain unrecorded for the present species; and presumption or probability would seem to warrant the inclusion of two of these four in the comital estimate, rather than to fix it at 12, the next downward step in the scale.

632. GNAPHALIUM ULIGINOSUM, *Linn.*

Area general?
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—46.

Native. Agrestal, Inundatal, &c. I possess no note of any locality for the present species in the province of the North Highlands; but being recorded as frequent in Moray, and found even in Orkney and Shetland, though locally, its occurrence in that province may be considered sufficiently probable. I have an indistinct recollection of seeing this species in Glen Clova, at 250 or 300 yards of elevation; and if so, its temperature might be carried down to 45 or 44.

633. FILAGO GALLICA, *Linn.*

Area * * 3 [4 5 * * 8 * * * * * * 15].
South limit in Herts, Essex.
North limit in same counties.
Estimate of provinces 1. Estimate of counties 2.
Latitude 51—52. Germanic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to —— ?
Ascends to 50 yards, more or less.
Range of mean annual temperature, say 49.

Colonist. Agrestal. An extremely local plant, some of the localities recorded for which may probably belong to F. minima. Besides the two counties above mentioned, it has also been said to grow in Kent (Brit. Flo.), Suffolk (Dr. Clarke), Worcester (Mr. E. Lees), Derby (Mr. Woodward, in B. G.), Fife (D. Don), Forfar (G. Don); but none of these alleged habitats can be safely trusted without additional testimony. Dr. Clarke terms it "common" about Ipswich, in Suffolk; which merely general indication, taken in connexion with the omission of Gnaphalium uliginosum from the Ipswich Flora, suggests that a mistake was made respecting the species.

634. FILAGO MINIMA, *Fries.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 16 17.
South limit in Devon, Isle of Wight, Kent.
North limit in Ross, Aberdeen, Argyle.
Estimate of provinces 17. Estimate of counties 75.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 250 yards, in East Highlands.
Range of mean annual temperature 52—44.
Native. Glareal, Ericetal. Not common, if considered as an example of the general or British type of distribution; though it may seem less frequent than the reality, on account of its small size rendering it liable to be overlooked. Doubtless the true south limit crosses Cornwall, although the species may not have been reported from that county. I find no authority or record for its existence in the Lake province.

635. FILAGO GERMANICA, *Linn.*
FILAGO CANESCENS, *Jord.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Ross, Aberdeen, Argyle.
Estimate of provinces 17. Estimate of counties 75.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 52—47.

Native. Glareal, Agrestal. More common in England than in Scotland; but too frequent, and too nearly general, in the latter country, to warrant its removal from the British to the English type of distribution.

635*. FILAGO APICULATA, *G. E. Sm.*
FILAGO LUTESCENS, *Jord.*

Area * 2 3 4 * * * * * 10.
South limit in Hants, —— ?
North limit in York, —— ?
Estimate of provinces — ? Estimate of counties — ?
Latitude 50—54 — ? English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, or nearly so.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 50—48.

Native. Glareal, Agrestal. Only very recently distinguished from F. germanica of Linnæus by English botanists; that acute and close observer of nature, the Rev. G. E. Smith, having been the first in this country to detect the principal characters by which it may be known from the Linnean species. It has been observed in Hants, Surrey, Herts, Essex, Norfolk, York; and in all probability will be found pretty generally in the English counties. At present, the distribution can be shown only very imperfectly.

635**. FILAGO SPATULATA, *Presl.*

Area * 2 3 4.
South limit in Dorset, Sussex, —— ?

North limit in Cambridge, —— ?
Estimate of provinces — ? Estimate of counties — ?
Latitude 50—53 — ? English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Channel.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—48.

Native. Glareal, Agrestal. Distinguished from F. Germanica, in Britain, still more recently than F. apiculata; the first distinct notice of it, I believe, having been made public by Mr. G. S. Gibson, who has been singularly successful in detecting localities for new or obscure species in our Flora. Although only first announced as British in the summer of 1848, it has already been reported from Dorset, Sussex, Surrey, Herts, Essex, and Cambridge. Authentic specimens of all the three allied species (germanica, apiculata, spatulata) having been numerously distributed by the Botanical Society of London, in the current year of 1849, most English botanists will be prepared to recognize them when met with; so that we may expect to hear of the occurrence of this one in various other counties besides those named above.

636. PETASITES VULGARIS, *Desf.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 * 18.
South limit in Devon, Dorset, Sussex, Kent.
North limit in Shetland? Orkney? Hebrides?
Estimate of provinces 17. Estimate of counties 75.
Latitude 50—58 (61). British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 500 yards, in East Highlands (Dickie)?

Range of mean annual temperature 51—46 (42).

Native. Pratal, Paludal. It is remarkable that the present species should be enumerated in Balfour and Babington's list of Hebridean plants, as observed by them in various parts of North Uist, Harris and Lewis, while the Tussilago Farfara was nowhere noticed in those Isles. On the contrary, in my own lists of species seen in the Highland counties, and especially in their mountain glens, the Tussilago Farfara is almost invariably included, while the name of the Petasites does not occur in any of those lists. I am tempted to think that the one name has been inadvertently substituted for the other, in the Hebridean Catalogue; and not unlikely the same mistake was made in Barry's Orkney. Both species are enumerated in the Flora of Shetland. Was it this species or Tussilago Farfara which was seen by Dr. Dickie, at 1500 feet of elevation, in Aberdeenshire?

† PETASITES ALBUS, *Gaert.*

Area (10).

Alien. "A large patch of this early-flowering plant occurs in an oak wood north of the hall [Storthes Hall?]. It is growing in a damp stony hollow, and covers many yards with its strong penetrating roots, which creep above ground among the stones in every direction."—"Peter Inchbald" (Storthes Hall, near Huddersfield), in Phytol. iii. 445.

NARDOSMIA FRAGRANS, *Rchbh.*

Area (1 2 * * * 6 7).

Alien. Frequently cultivated in shrubberies, and not

easily eradicated from any damp and shady place in which it has once got fully established. Mr. Babington says that it is "plentifully naturalized" on the cliffs below the town of Tenby. Mr. Motley informed me that it is "perfectly naturalized" in several fields near the furnace toll-bar, Llanelly, Caermarthenshire. Dr. Bromfield considers it naturalized, but not seeding, in Hampshire. I have observed it also established in Devon and Denbighshire. A Tussilago of most authors, except the recent ones, who appear to be fast discarding the Linnean principle that the genus should give the character, not a character make a genus.

637. TUSSILAGO FARFARA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Caithness.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 850 yards, in East Highlands.
Range of mean annual temperature 52—38.

Native. Inundatal, Agrestal, &c. Very general in Britain, extending northward into Faroe and throughout Scandinavia,—a distribution which gives additional probability to the suggestion thrown out under Petasites vulgaris, to the effect that the present species is not really absent from the Hebrides, but was there mistaken for Petasites vulgaris. In conformity with this idea, we find Barry recording only the Petasites, while Neill mentions only the Farfara, in Orkney.

TUSSILAGO ALPINA, *Linn.*

Area [15].

Incognit. Included, like so many other dubious plants, among G. Don's discoveries in Forfarshire; but no other botanist appears to have found it in Britain. Mr. Gardiner suggests that Don intended Erigeron alpinus; but it is difficult to conceive a mistake between plants so very dissimilar. Homogyne alpina of some authors.

638. ERIGERON ALPINUS, *Linn.*

Area * * * * * * * * * * * * * * 15.
South limit in Perth, Forfar.
North limit in same counties,—or Aberdeen?
Estimate of provinces 1. Estimate of counties 3.
Latitude 56—57. Highland type of distribution.
Arctic region. Midarctic zone.
Descends to 800 or 850 yards, in East Highlands.
Ascends to 850 or 900 yards, in same province.
Range of mean annual temperature 38—37.
Native. Rupestral. Very local; occurring on Ben Lawers, in Perthshire, and in Glens Dole and Canlochen, in Forfarshire. I have an indistinct recollection of seeing it in Aberdeenshire, either about the rocks above Loch Callater, or somewhere on the Ben-na-Buird range.

639. ERIGERON ACRIS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 * 14 15.
South limit in Dorset, Isle of Wight, Kent.

North limit in Forfar, Holy Island, Westmoreland.
Estimate of provinces 14. Estimate of counties 40.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Glareal, Pascual. In a general view this species is clearly a plant of the "glareal" group; and yet some of its localities are in spots liable to be very wet in the winter season, although dry and parched in summer: for example, it occurs in the hollows among sand-hills on the coasts, and in pastures where the soil is an admixture of sand and clayey loam, holding wet through the winter, and becoming hard and dry as a brick in summer. Lightfoot and Hooker say (Flo. Scot.) that the present species is frequent in dry mountainous pastures in Scotland. I am aware of only one Scottish county in which it is really ascertained to occur, namely, that of Forfar. It is enumerated likewise in the Flora of Berwick-on-Tweed, but the habitat is not strictly in Scotland, being on Holy Island.

640. ERIGERON CANADENSIS, *Linn.*

Area (1 * 3 * 5 6 * * 9 * 11).

Alien. A species widely diffused about the earth, in climates somewhat warmer than that of Britain; having, probably, accompanied the human race in their settlements. In England it is of uncertain occurrence, and perhaps most frequently met with in the province of Thames.

641. ASTER TRIPOLIUM, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Hebrides, E. Sutherland, Ross.
Estimate of provinces 18. Estimate of counties 50.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends, at the coast level, to North Highlands.
Range of mean annual temperature 52—47.
Native. Littoral. Although the Rev. G. Gordon mentions to me the occurrrence of this plant in Sutherland, I do not venture to indicate a higher northern latitude than that of 58, under the supposition that it was observed in the South-east of the county named. In the Catalogue of Hebridean plants, only the Isle of North Uist is mentioned for this species.

642. SOLIDAGO VIRGAUREA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Superarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 950 or 1000 yards, in East Highlands.
Range of mean annual temperature 52—37.
Native. Sylvatical, Ericetal. As this plant ascends to

the extreme limit of the Calluna, on the central Grampians, and 150 yards higher than that shrub, on Ben Hope, in Sutherland, it seems properly referred to the superarctic zone.

643. SENECIO VULGARIS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to 400 yards, in East Highlands.
Range of mean annual temperature 52—42.

Native. Agrestal. One of the very commonest species in the cultivated lands of Britain; and it may serve to illustrate the incompleteness of our county lists of common plants, when I mention that there are still twenty counties, or a fourth of the whole number, in reference to which I am unable to adduce any botanical authority for the occurrence of the vulgar Groundsel within them. It was chiefly on account of the deficiencies in our records of the commoner species, that I was induced to found a census upon an "estimate" of provinces and counties, rather than upon the number actually ascertained and recorded.

644. SENECIO SYLVATICUS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Cornwall, Isle of Wight, Kent.

North limit in Caithness, Sutherland.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—59. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 yards, in East Highlands.
Range of mean annual temperature 52—43.
Native. Glareal, Sylvestral. Hitherto unrecorded from the North Isles; although likely enough to occur in the Hebrides, if not in either of the two more northerly groups.

645. SENECIO VISCOSUS, *Linn.*

Area * [2] 3 4 5 6 7 8 9 10 11 12 13 14 15 16.
South limit in Dorset? Glamorgan, Surrey? Kent.
North limit in Aberdeen, Dumbarton, Renfrew.
Estimate of provinces 14. Estimate of counties 30.
Latitude 51—58. British type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in Thames province.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 50—47.
Native. Viatical. According to Dr. Salter's list this species is frequent within sixteen miles of Poole, in Dorset, though rare within eight miles of the town. This list being the only authority for the existence of the plant within the Channel province, while I have none for that of the Peninsula, I cannot avoid some distrust of Dr. Salter's accuracy in this instance. And I fear that the localities reported for thirty other counties altogether, exclusive of Dorset, may some of them be erroneous. The counties from which I have seen specimens are those of Suffolk (Mr. Notcutt), Durham (Rev. John Bigge), Northumberland (Mr. Storey),

Wigton (Professor Balfour), Edinburgh (H. C. W.), Dumbarton (Dr. J. D. Hooker); which of themselves suffice to indicate a wide area for the species.

646. SENECIO SQUALIDUS, *Linn.*

Area (1 * 3 * 5).

Alien. Reported as growing in Devon, Somerset, Oxford, Worcester, and Warwick; some doubt attaching to the second county, from the indicated locality, "in the marsh near Burnham and Huntspill," being so dissimilar to that of "old walls," on which it is said to grow in the other counties.

647. SENECIO ERUCÆFOLIUS, *Linn.*
647, b. SENECIO TENUIFOLIUS, *Jacq.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Lanark, Berwick.

Estimate of provinces 13. Estimate of counties 50.

Latitude 50—56. English type of distribution.

Agrarian region. Inferagrarian—Midagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 51—47.

Native. Septal, Viatical, &c. Variable in its situations of growth, and variable also in the form of its leaves and general appearance. Dr. Bromfield informs me that Senecio barbaræfolia (Reich.) occurs by road-sides about Southampton, not uncommonly; where it was pointed out to him by Mr. Babington; and that it is apparently intermediate

between Senecio tenuifolius and Jacobæa. I do not know what is the plant so named by Reichenbach; and it is not mentioned in Dr. Bromfield's list of Hants' plants, in Phytologist, iii.; nor in the Manual of British Botany.

648. SENECIO JACOBÆA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 700 yards, in East Highlands.
Range of mean annual temperature 52—40.

Native. Pascual, &c. Ascends almost to the midarctic zone, in the West of Aberdeenshire; but is not often seen above the line of cultivation. The Rev. G. Gordon says that there is "a tradition among agriculturists that this plant (now so abundant on and in the neighbourhood of cultivated ground, or by road-sides) was introduced into the North of Scotland."

648, b. SENECIO AQUATICUS, *Huds.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 350 yards, in East Highlands.

Range of mean annual temperature 52—43.

Native. Inundatal, &c. Having frequently met with living specimens which I hesitated whether to name S. aquaticus or S. Jacobæa, there has always remained on my mind a sort of lingering doubt respecting the real distinctness of the two species so designated. By some other botanists, however, our S. aquaticus has been referred to, or connected with, quite a different species from S. Jacobæa; namely, S. erraticus, to which consequently I devote a few lines separately.

SENECIO ERRATICUS, *Bert.*

Area [5, &c.]

Incognit. This species was first, I believe, classed among British plants in Babington's 'Primitiæ Floræ Sarnicæ;' where the Author of the work states, truly enough, that it differs from the S. aquaticus, of Hudson and Smith, in several particulars; and adds, I fear not truly, that "it is found in several parts of England." In the Catalogue published for the Botanical Society of Edinburgh, under the auspices of Mr. Babington, it is still kept in the British list, and marked as being "rather rare" in the vicinity of Edinburgh; but is placed as a variety of S. aquaticus, instead of a distinct species. In the Flora of Shropshire, the S. erraticus is given as the Salopian species, and S. aquaticus altogether omitted. In the Manual of British Botany, however, the name "*S. erraticus*, Bert." is dubiously referred to as a synonym for a large ("*major*") variety of S. aquaticus. I scarce know how to understand all this. I am familiar with S. erraticus from having seen

numerous foreign specimens of it, and having kept it in my garden a year or two; but I have never seen a British plant to which I should apply that name, and therefore suppose that Mr. Babington mistook for it some form of S. aquaticus; Mr. Leighton, perhaps, following Mr. Babington, without having had the chance of correcting the error, by an examination of foreign examples of S. erraticus; which latter species, however easily recognized when once known, is not easily characterized in print, so as to distinguish it clearly from S. aquaticus.

649. SENECIO PALUDOSUS, *Linn.*

Area * * * 4 * * * 8 [9 * * * * * * * 17].
South limit in Suffolk, Cambridge.
North limit in Lincoln.
Estimate of provinces 2. Estimate of counties 3.
Latitude 52—54. Germanic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Ouse province.
Ascends to 50 yards, more or less.
Range of mean annual temperature 49—48.
Native. Paludal. Apparently a very local species, restricted to some of the fenland tracts in the Eastern provinces of England. The counties of Chester (Waring, quoted in B. G.) and Ross (Gordon cat., quoted in N. B. G.) have likely been indicated by mistake or inadvertence.

650. SENECIO SARACENICUS, *Linn.*

Area 1 2 * * 5 * 7 8 9 10 (11) 12 13 14 (15 16).
South limit in Somerset, Wilts.

N. lim. in Cumberland, York;—or, in Edinburgh, Lanark.
Estimate of provinces 10. Estimate of counties 20.
Latitude 51—56. Uncertain type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 50—47.

Denizen. Paludal, Pratal. Admitted as a native species by Henslow and Babington; as also by some local observers, whose opinions must be allowed a fair degree of weight. The late Mr. J. E. Bowman wrote, "stream above the King's Mills, Wrexham, undoubtedly wild;" and the Rev. George Pinder, of Sedberg, replies to my query respecting its condition in that vicinity, that he considers it native there, "being found frequently in the neighbourhood, by the river, and in wild uncultivated places." On the other hand, several of its recorded localities are suspicious and distrusted, and in some of them it cannot now be found. Mr. Winch sent me a Northumbrian specimen, labelled "probably the outcast of a garden." Don says, "always near houses," in Forfarshire; and Mr. Gardiner does not find it at all in that county. In the Flora Abredonensis and Moray Collectanea, it is entered as a species certainly introduced.

651. CINERARIA PALUSTRIS, *Linn.*

Area * * * 4 [5 6 7] 8 [9 * * 12].
South limit in Suffolk, Cambridge, Hunts.
North limit in Lincoln, Norfolk?
Estimate of provinces 2. Estimate of counties 4.
Latitude 52—54. Germanic type of distribution.
Agrarian region. Inferagrarian zone.

Descends to the coast level, in Ouse province.
Ascends to 50 yards, more or less.
Range of mean annual temperature 49—48.
Native. Paludal. Belonging to the Germanic type by its habitats, like Senecio paludosus, but rather an example of local and uncertain, than properly eastern type. There are old, erroneous, or insufficient authorities on record for the occurrence of the species in Westmoreland (Robson, quoted in B. G.), Lancaster and Merioneth (Ray), Glamorgan (B. G., but an error), and Stafford (Mr. Spark, in Garner N. H. S.); all of which it seems safer to reject, unless confirmed.

652. CINERARIA CAMPESTRIS, *Retz.*

Area * 2 3 4 5 * 7.
South limit in Dorset, Hants, Sussex.
North limit in Cambridge, Northampton, Anglesea.
Estimate of provinces 5. Estimate of counties 12.
Latitude 50—54. English (?) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in North Wales.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 50—48.
Native. Glareal or Pascual. A scarce species, with some approximation to the Germanic type of distribution; being rather eastern and inland in its habitats, excepting the one outlying locality for a maritime variety, on cliffs, near Holyhead, in Anglesea. But the Anglesea plant is said to be only a form or state of the C. campestris, by Mr. Babington, in Mag. Nat. Hist. v. p. 88.

653. DORONICUM PARDALIANCHES, *Linn.*

Area (1 2 3 4 5 * * * * 10 11 * 13 14 15).

Alien. More or less established in many provinces; but most of its habitats are recorded with distrust, or with admissions that it is an escape from gardens.

654. DORONICUM PLANTAGINEUM, *Linn.*

Area (* 2 3 * * * * 8 * * * * * 14 15).

Alien. The same remark will apply to this one, as to the preceding species. Which of the two is really more frequent, it may be difficult to say; the names having apparently been often crossed or misapplied.

655. INULA HELENIUM, *Linn.*

Area 1 2 3 4 5 6 7 * (9) 10 11 12 (13 * 15 16 17).

South limit in Cornwall, Isle of Wight, Sussex.

North limit in Durham, Westmoreland, Cumberland?

Estimate of provinces 10. Estimate of counties 25.

Latitude 50—55. English type of distribution.

Agrarian region. Inferagrarian—Midagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 52—48.

Native. Paludal, Pratal, &c. Apparently a true native of England, although only an introduced plant in many of the localities on record for it. The Scottish habitats are very few, and usually about old houses or castles, to which it had probably been introduced for ornament or use.

656. INULA CONYZA, *DC.*

Area 1 2 3 4 5 6 7 8 9 10 (11) 12 * * [15].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Westmoreland, York.
Estimate of provinces 11. Estimate of counties 40.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.
Native. Septal, Glareal, &c. Probably the estimate of 40 counties may be too low, but that of 50 might be as much too high for the census of this species, which has already been found in 36 counties, and is likely to occur in several others that remain to be more thoroughly examined. Only in woods in North Surrey.

657. INULA CRITHMOIDES, *Linn.*

Area 1 2 3 [4] * 6 7 * * * * * 13.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Wigton, Kirkcudbright, Essex.
Estimate of provinces 6. Estimate of counties 15.
Latitude 50—55. Atlantic type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends, at the coast level, to West Lowlands.
Range of mean annual temperature 52—49.
Native. Littoral. Apparently unfitted to bear the more severe climate of the eastern coasts, excepting quite in the

South of England. It is said that a single specimen was found at Caistor, on the east coast of Norfolk, in 1784; and the coast of Suffolk was recorded for the species in Gough's Camden (B. G.) On good or admissible authority, it is reported from Essex, Kent, Hants, Dorset, Devon, Cornwall, Somerset, Glamorgan, Caermarthen, Pembroke, Anglesea, Kirkcudbright, and Wigton.

658. PULICARIA DYSENTERICA, *Gaert.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 * 16.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Argylé (Islay, &c.), Haddington.
Estimate of provinces 15. Estimate of counties 50.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—48.
Native. Inundatal, Pascual, &c. A good example of what is intended by the English type of distribution; being quite a common plant in the southern provinces, becoming gradually less so in a northerly direction, and a rare species in the South of Scotland, where it finally ceases.

659. PULICARIA VULGARIS, *Gaert.*

Area * 2 3 4 5 * * * * [10].
South limit in Dorset, Isle of Wight, Kent.
North limit in Warwick, Cambridge, Norfolk.
Estimate of provinces 4. Estimate of counties 20.
Latitude 50—53. Germanic type of distribution.

Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Channel.
Ascends to 50 or 100 yards, in England.
Range of mean annual temperature 51—48.

Native. Inundatal, Viatical. In addition to the six counties above mentioned, this is reported from Wilts, Sussex, Surrey, Oxford, Middlesex, Herts, Essex, Bedford, Huntingdon; making 15 in the whole. In Yorkshire, according to the 'Outlines,' but I cannot find the original authority for this county, and the species is not included in Baines's Flora of Yorkshire. But some of the intermediate counties appear sufficiently probable to justify the next higher step in the comital census; more especially, as Dr. Bromfield well suggests, because its inconspicuous aspect may cause it to be overlooked by collectors. It seems, however, restricted to a small area. A good example of the Germanic, as the other species is of the English type; the antecedent one (Inula crithmoides) of the Atlantic; the next succeeding (Bellis) of the British. Any botanist who will mark the habitats of these four plants on a map of Britain, if only by counties, without more minute detail, will clearly see what is intended by types of distribution.

660. BELLIS PERENNIS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 900 yards, in East Highlands.

Range of mean annual temperature 52—38.

Native. Pascual. A species so familiar and so conspicuous as the Daisy will never be overlooked by botanists who are endeavouring to make a full list of species for any county or section. In order, therefore, to show the counties, concerning the botany of which we may be said to possess the least full information, I will here enumerate those in which I find the Daisy *not* recorded to grow, although no doubt can be entertained as to its occurrence in all of them. These are Berks, Bucks, Northampton, Brecon, Radnor, Montgomery, Merioneth, Flint, Lincoln, Westmoreland, Dumfries, Kirkcudbright, Wigton, Peebles, Selkirk, Haddington, Linlithgow. In several of these counties I must myself have seen Daisies innumerable, and yet have not retained any distinct recollection of the fact. The Bellis is not frequent above the agrarian region.

661. CHRYSANTHEMUM SEGETUM, *Linn.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Orkney, Hebrides.

Estimate of provinces 18. Estimate of counties 82.

Latitude 50—61. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 250 or 300 yards, in E. Highlands (Dickie).

Range of mean annual temperature 52—44.

Colonist. Agrestal. It may appear to others an excess of scepticism to substitute the term "Colonist" in place of "Native," for expressing the civil claims of this very abundant species; and yet my inclination decidedly is towards holding it an importation. Its aspect and affinities are

those of a more southern latitude; and it is more susceptible to frost than many others of our corn weeds. This may explain its comparative infrequency in the winter-sown wheat crops, as lately remarked to be the case by Dr. Bromfield, in the Phytologist, iii. 438. Has it any genuine English name? "Corn Marigold" can scarcely be so considered; but "Yellow Bozzum" (Bosom?) may be, though not one of very ancient sound. I have not observed it above Pitmain, in the Highlands, about 750 feet; Dr. Dickie records it at 820 feet in Aberdeenshire; and Mr. Petermann saw it in flower, in a garden, at Carour, West Inverness, which he calculated to be 1740 feet.

662. CHRYSANTHEMUM LEUCANTHEMUM, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, North Sutherland.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 700 yards, in N. Wales.
Range of mean annual temperature 52—41.

Native. Pascual. I saw this at 1500 feet in Braemar, and Mr. Petermann says even up to 1740 feet at Carour. Though not enumerated by Balfour and Babington, in their list of Hebridean plants, I have ventured to include that group of isles in the comital census, and so take it at the full number, instead of 81.

663. PYRETHRUM PARTHENIUM, *Sm.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Ross, Moray, Dumbarton.
Estimate of provinces 17. Estimate of counties 75.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.
Denizen. Viatical, Septal. Probably introduced to Britain, but so well established in numerous localities that it cannot now be treated as an alien; nor can any hard line of distinction be drawn between the character of the habitats, beyond the general rule, that the farther we go northward the more suspicious and distrusted they are found to be.

664. PYRETHRUM INODORUM, *Sm.*
664, b. PYRETHRUM MARITIMUM, *Sm.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Hebrides, Caithness.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 400 or 450 yards, in East Highlands.
Range of mean annual temperature 52—42.

Native. Agrestal, Viatical, &c. A very general plant, omitted from the manuscript Flora of Orkney, by Dr. Gillies; but probably by mere inadvertence, since it is said to be very common in Shetland: extending also to Faroe, and over all Scandinavia. P. maritimum probably occurs all around the coast of Britain, from the Isle of Wight (Dr. Bromfield) to Orkney (Dr. Neill); but I am not able to quote any authority for it in provinces 4, 5, 8.

665. MATRICARIA CHAMOMILLA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 (15 16) * [18].
South limit in Cornwall, Dorset, Hants, Kent.
North limit about Edinburgh and Glasgow.
Estimate of provinces 14. Estimate of counties 50.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Viatical, Agrestal. Probably to be found in nearly all the English counties, although often overlooked, from its general resemblance to species of Anthemis, &c. In Scotland apparently quite rare. Dr. Macgillivray includes it in his list of Hebridean plants, but it was not observed in the Isles by Messrs. Babington and Balfour. In Orkney, according to the Rev. C. Clouston, which is probably also a mistake. Lightfoot records a variety "suaveolens," as seen at the entrance of Glen Beg, near Glen Elg, West Highlands. Mr. Lawson mentions the species as one introduced to Fife. It is said to occur rarely (B. S. E. Cat.) about Edinburgh, occasionally about Glasgow. I have no other authority for Scotland, except

the Flora of Lanarkshire, relating mainly to the same ground as that of Glasgow.

ANACYCLUS RADIATUS, *Lois.*

Hibernian, but Alien. Found at Dunboy Quay, Bearhaven, Cork, by Mr. W. Wilson, according to the Manual of British Botany. The locality was originally reported for Anthemis anglica.

666. ANTHEMIS ANGLICA, *Spreng.*

Area [* 2 * * * 6 * * * * * 11 * 13].

Incognit. Something has been reported under the name of Anthemis maritima and A. anglica, from Sussex, Glamorgan, Pembroke, Durham, Kirkcudbright, and the North-East of Scotland. It is probable that Pyrethrum maritimum was the plant really intended in most of these habitats. Mr. Babington, however, appears to have seen some other plant, found at Sunderland by Mr. James Backhouse, in 1844; and which he considers to be the A. maritima of Smith, corresponding with the A. anglica of Sprengel, and "very different from A. maritima (L.)" To me this remains quite unknown, and I have no blind faith in the *carefulness* of Mr. James Backhouse's observations or statements, although I regard him as quite sincere by intention.

667. ANTHEMIS NOBILIS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * * 14 * 16.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Islay, Bute, Berwick or Durham.
Estimate of provinces 13. Estimate of counties 40.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—48.

Native. Pascual. Abundant on many grassy commons in the South of England; but rapidly decreasing northward. It does not appear quite clear from the Flora of Berwick-on-Tweed, the only authority for the East Highland province, whether the present species is really indigenous there. (See Flo. Berw.; and in particular, vol. ii. 292). I am indebted to Professor Balfour for a specimen from Islay.

668. ANTHEMIS ARVENSIS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15.
South limit in Devon, Isle of Wight, Kent.
North limit in Moray? Forfar, Lanark.
Estimate of provinces 15. Estimate of counties 40.
Latitude 50—57 (58). English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Agrestal. Either infrequent or often overlooked in England; apparently local or rare in Scotland. The Rev. G. Gordon thinks it may have been introduced into Moray, where it is frequent. Omitted from the Flora Abredonensis, like all the other species of its genus. Don recorded it in his Forfarshire list; and its occurrence in one

locality in that county is confirmed by Mr. J. Cruickshank. Rather rare about Edinburgh; though less so than A. Cotula, it would seem, by the Botanical Society's Catalogue.

669. ANTHEMIS COTULA, *Linn.*

Area 1 2 3 4 5 6 7 8 * 10 11 * 13 14 15 16 * (18).
South limit in Cornwall, Isle of Wight, Kent.
North limit in Dumbarton, Fife, Forfar?
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Agrestal, Viatical. A common weed in the South of England; much less so in the North; rare in Scotland. Enumerated among the Forfarshire plants by Don, but not confirmed by any more recent authority in Gardiner's Flora of that county. Omitted from the lists for all the more northerly counties, with the two suspicious exceptions of those for Orkney (Lowe) and Shetland (Edmondston); and in these Isles, unless there be some error about the species, we may fairly assume the plant an introduced one, especially as only a single locality is mentioned by Edmondston. Said to be rare about Edinburgh; absent from the neighbourhood of Berwick-on-Tweed.

670. ANTHEMIS TINCTORIA, *Linn.*

Area (3 * * * * * * * 11 * * * 15).
Alien. Babington enumerates this species as a true

native. It is said to have occurred in Essex, Durham, Northumberland, Fife, Forfar; but under circumstances, or on authority, very much to be distrusted.

671. ACHILLEA PTARMICA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 700 yards, in East Highlands.
Range of mean annual temperature 52—40.
Native. Pratal, Ericetal, &c. Evinces so decided a tendency to damp places, as to come very near the class of Paludal or Uliginal plants. Ascends to 800 yards in Cumberland.

671, b. ACHILLEA SERRATA, *Sm.*
"ACHILLEA DECOLORANS, *Schrad.*"

Area [1 * * * * * * 8 * 10].
Incognit? This has been reported from Somerset (Mr. T. B. Flower), Derby (Mr. Rapp, in Eng. Bot.), York (Mr. Mann, Bot. Soc. Edinburgh!) The plant figured in English Botany, and a fragment of one in my herbarium, sent to me by the Botanical Society of Edinburgh, belong to some other species than A. Ptarmica; and such also would appear to be the case with a specimen sent by Mr. Flower to Mr. Babington, from Somerset. Nevertheless, I

feel the evidence quite insufficient for admitting, as really British, anything nearer to the species above named than a yellowish-flowered variety of A. Ptarmica. The specimens referred to above were probably of garden origin, and had been mingled with English plants by some inadvertence. Mr. Flower has himself explained (Bot. Gaz.) that the Somerset locality cannot be again found or relied upon. I have seen the Achillea Ptarmica with a decidedly yellow tinge to the flowers, though the tint fades away in desiccation. Mr. Saunders, writing of Oxfordshire botany, says, that A. Ptarmica "grows to a very large size, and with a yellowish tinge in the flowers, in the meadows by the side of the Cherwell." (Mag. Nat. Hist., new series, iii. 239.)

672. ACHILLEA MILLEFOLIUM, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Superarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 1300 yards, in East Highlands.
Range of mean annual temperature 52—34.
Native. Pascual, Glareal. Among the most common and most general of British plants; ascending even to the summit of Ben Lawers.

673. ACHILLEA TOMENTOSA, *Linn.*

Area * * * * * * * * * * * * 13 * 15 16.
South limit in Renfrew and Dumbarton.

North limit in Banffshire.
Estimate of provinces 3. Estimate of counties 3.
Latitude 55—58. Local type of distribution.
Agrarian region. Superagrarian zone.
Descends to —— ?
Ascends to —— ?
Range of mean annual temperature, say 46.

Native? Pascual? It is curious that the three localities reported for this species should be situate in as many different counties, and even provinces. A fourth is given in Babington's Manual; namely, near Newcastle, in the county of Down, Ireland. Possibly the locality near Paisley, Renfrewshire, may belong to the midagrarian zone; certainly so, if only of slight altitude.

674. ACHILLEA TANACETIFOLIA, *All.*

Area * * * * * * * 8 * 10.
South limit in Derbyshire.
North limit in Yorkshire.
Estimate of provinces 2. Estimate of counties 2.
Latitude 53—54. Local type of distribution.
Agrarian region. Superagrarian (?) zone.
Descends to —— ?
Ascends to —— ?
Range of mean annual temperature, say 46—45.

Native? Ericetal? A recent addition to the British Flora; hitherto found only, it would seem, by Mr. John Hardy, whose discovery is thus announced by Mr. C. C. Babington, in Annals of Natural History, for February, 1847:—"On Cromford Moor, near Matlock Bath, Derbyshire, July 21, 1843; and on a rough hilly bank near Ringing Low, five miles north of Sheffield, July, 1844;

the plant accompanied by Vaccinium Vitis-Idæa, &c., and growing among a profusion of Lastrea Oreopteris." With a specimen from the Yorkshire habitat, communicated by Mr. Hardy to the Botanical Society of London, the following slight variation occurs in the description of the locality: "side of a high heathy hill, in a soil of sand and coal shale, overlying the gannister coal, of the new red sandstone, July, 1845." It should be sought elsewhere in the same and adjacent counties.

XANTHIUM STRUMARIUM, *Linn.*

Area (* 2 3 * * * * * * * 11).

Alien. Has been occasionally found in England. The counties of Dorset, Hants, Kent, Surrey, Middlesex, Durham and Northumberland have been recorded for it. When cultivated in my garden, in Surrey, I find it very impatient of frost, and so tardy in flowering in the autumn that the fruit fails to ripen. My seeds of it had been obtained from the Azores, and might possibly belong to a more tender variety, for the fruit of the Azoric specimens is rather shorter and broader than was the case on the solitary specimen which I found, apparently wild, near Peckham, in Surrey, in 1831.

675. CAMPANULA ROTUNDIFOLIA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Caithness, Hebrides.
Estimate of provinces 18. Estimate of counties 81.
Latitude 50—61. British type of distribution.

A. A. regions. Inferagrarian—Superarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 1150 yards, in West Highlands.
Range of mean annual temperature 52—35.
Native. Ericetal, Glareal. Omitted from the Orkney lists alike by Lowe, Gillies, and Clouston; and on this account I have not ventured to include the Orkney Isles in the comital census; although the occurrence of the species in Shetland and Faroe, as well as throughout Scandinavia, and its prevalence in Britain, all tend to create a presumption in favour of its existence likewise in Orkney.

676. CAMPANULA PATULA, *Linn.*

Area 1 2 3 4 5 6 * 8 * 10 * 12.
South limit in Dorset, Hants, Sussex, Kent.
North limit in Westmoreland, York.
Estimate of provinces 9. Estimate of counties 20.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, or nearly so.
Ascends to 50 or 100 yards, in England.
Range of mean annual temperature 51—48.
Native. Septal. It is to be feared that several erroneous localities have been recorded for the present species. The province of the Peninsula rests on the unconfirmed authority of Maton, as given in Turner and Dillwyn's Guide; that of the Ouse, on the authority of the Rev. R. B. Francis, as quoted in the same Guide and in the English Flora; that of the Lakes, on the authority of Mr. G. S. Gibson, who found the species "between Kendal and Arnside." It would be desirable to have all these three localities confirmed afresh, or others discovered in the same provinces.

677. CAMPANULA RAPUNCULUS, *Linn.*

Area (1) 2 3 4 5 * (7 8 * 10 11) * * * [15].
South limit in Somerset? Hants? Sussex, Kent.
North limit in Denbigh? Stafford, Norfolk.
Estimate of provinces 6. Estimate of counties 12.
Latitude 51—53. English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Thames province.
Ascends to 50 or 100 yards, in England.
Range of mean annual temperature 50—48.

Denizen. Septal. Uncertain whether this should be held a native of Britain, or as a species which became established through cultivation. In the county of Surrey, if not originally native, it is perfectly established at intervals over a tract of several square miles around Hersham; but is so constantly eaten down by cattle wherever they can get at it, that it remains comparatively rare even within the tract mentioned. In many of its localities the presumption of an origin from former cultivation appears very strong. Babington and Henslow both allow it to be a native British species; while Hooker places it among the introduced.

678. CAMPANULA LATIFOLIA, *Linn.*

Area [1] * 3 4 5 6 7 8 9 10 11 12 13 14 15 16.
South limit in Surrey, Gloucester, Monmouth.
North limit in Moray, Aberdeen, Argyle.
Estimate of provinces 14. Estimate of counties 50.
Latitude 51—58. Scottish type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in Ouse or Severn?
Ascends to 250 yards, in East Highlands (Dickie).
Range of mean annual temperature 49—44.

Native. Sylvestral, Septal. Pretty frequent in the North of England and the South of Scotland; but apparently shunning the two extreme provinces at each end of Britain. In Turner and Dillwyn's Guide it is stated to be very frequent in Cornwall; but no botanist of the present time appears to find it in that county. Through the Botanical Society of London, I have received specimens from Reigate, in Surrey (Mr. Brewer), and Glen Frome, near Bristol (Mr. Thwaites); the specimens from the latter being labelled "C. rapunculoides." As high as 820 feet in Aberdeenshire, according to Dr. Dickie.

679. CAMPANULA RAPUNCULOIDES, *Linn.*

Area [* 2 3] 4 [5] * * 8 * 10 * * * 14 15.
South limit in Oxford? Bedford, Worcester?
North limit in Forfar? Perth? Fife.
Estimate of provinces 5. Estimate of counties 6.
Latitude 51—57. Scottish (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, or nearly so.
Ascends to 100 or 200 yards.
Range of mean annual temperature 48—46.

Native. Sylvestral. Recorded in few localities, distantly scattered in England and Scotland, and very probably some of them erroneous. In a copse, near Lulworth, in Dorset, according to Dr. Bromfield in the New Botanist's Guide, but referring to Mr. Curtis, and not writing as an eye-witness. In Oxfordshire, according to Buddle's Herba-

rium, referred to in English Flora, &c. Near Luton, in Bedfordshire, by a specimen sent to the Botanical Society of London, by Miss S. Forster. In the neighbourhood of Bristol, on the Gloucestershire side, according to a Catalogue of Bristol plants from Dr. J. D. Hooker, checked off with the assistance of Mr. Thwaites; but this may be an error, as indicated by an explanation given under Campanula latifolia. In a lane near Shrawley, in Worcestershire, according to the Rev. G. H. Piercy, in the Midland Flora. A troublesome weed in several places near Nottingham, by the Flora of Notts. Two localities are mentioned in the Flora of Yorkshire. And it has been reported on various authority from Edinburgh, Fife, Perth, and Forfar; though the two latter counties are not quite satisfactorily shown to produce it in a native condition. I suppress some other localities, still unpublished, because they are most likely erroneous, and it seems not advisable to add to the number of probable errors, already in print, respecting the habitats of this species.

680. CAMPANULA TRACHELIUM, *Linn.*

Area 1 2 3 4 5 6 7 8 * * (11 12 13 14 15).
South limit in Devon, Isle of Wight, Kent.
North limit in Westmoreland? Anglesea, Derby, Notts.
Estimate of provinces 8. Estimate of counties 30.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—48.

Native. Sylvestral. In nearly all the counties of the first six provinces; becoming scarce to the northward of

those provinces. I have specimens from Edinburgh (Mr. Lloyd) and Fife (Rev. A. Robertson—Prof. Balfour); but in the Edinburgh Catalogue it is marked as a distrusted native. A specimen came to me among Lanarkshire plants, from Dr. J. D. Hooker; but it is not included in the Flora of that county; and in the Flora Glottiana the only habitat given is on the old walls of Mugdock Castle (Stirlingshire ?). Under these circumstances, we can scarcely receive the species as clearly an indigenous one in Scotland. Mr. G. S. Gibson gave me a manuscript note of its occurrence "near Kendal;" and it is enumerated in the Annals of Kendal; but it does not clearly appear whether Mr. Gibson intended to confirm or only to mention the habitat indicated in the Annals referred to.

681. CAMPANULA GLOMERATA, *Linn.*

Area 1 2 3 4 5 6 * 8 * 10 11 12 * 14 15.
South limit in Dorset, Isle of Wight, Kent.
North limit in Forfar, Fife, Cumberland.
Estimate of provinces 12. Estimate of counties 40.
Latitude 50—57. Germanic type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Channel.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—48.

Native. Pratal, Pascual. Apparently absent from four of the western provinces; and reported only from single counties in three others, namely, Peninsula, South Wales, Lakes. It is therefore assigned to the Germanic or eastern type, although occurring in several western counties.

682. CAMPANULA PERSICIFOLIA, *Linn.*

Area (15).

Alien. In "woods near Cullen, apparently indigenous." (Flo. Scot.) Although widely distributed in Scandinavia, it is to be feared that there is very slight ground for supposing this to be a native of Scotland; nor does it clearly appear whether the plant is still found in the neighbourhood, or was found there only some years ago.

683. WAHLENBERGIA HEDERACEA, *Rchbh.*

Area 1 2 3 * 5 6 7 * 9 10 * 12 13.

South limit in Cornwall, Isle of Wight, Sussex.

North limit in Renfrew, Isle of Man, York.

Estimate of provinces 10. Estimate of counties 30.

Latitude 50—56. Atlantic type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 300 yards, in the same province.

Range of mean annual temperature 52—46.

Native. Uliginal. This species does not attain to the superagrarian zone by its latitudinal range; but since it is stated to occur about Capel Curig (Mr. G. S. Gibson) and in the valleys about Snowdon (Mr. J. E. Bowman, &c.), in North Wales, it would seem to attain that zone by climate and mountain proximity. Very local in the two eastern provinces which are above indicated; namely, Humber and Thames; becoming more frequent in the demi-eastern province of the Channel.

684. SPECULARIA HYBRIDA, *A. DC.*

Area 1 2.3 4 5 * * 8 * 10 11 * * (14 15).
South limit in Cornwall, Isle of Wight, Kent.
North limit in Fife, Haddington;—or Durham, Stafford.
Estimate of provinces 8 (10). Estimate of counties 30.
Latitude 50—55 (57). Germanic type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—48.

Native. Agrestal. Though reported from all the counties of the only two westerly provinces above indicated, except those of Monmouth and Worcester, this species would still appear to be of very local occurrence within these provinces. My authority for the county of Cornwall, and for the only locality which I am aware of in that county, is Miss Warren, who communicated specimens to the Botanical Society, and of whose botanical skill and accuracy I have conceived a favourable opinion, from inspection of the parcels sent to that Society.

686. PHYTEUMA SPICATUM, *Linn.*

Area * 2.
South and North limits in Sussex.
Estimate of provinces 1. Estimate of counties 1.
Latitude 51. Local type of distribution.
Agrarian region. Inferagrarian zone.
Descends to 50 yards, more or less.
Ascends to 50 or 100 yards?

Range of mean annual temperature 50—49.

Native? Sylvestral. Extremely local, having hitherto been observed only in a very limited tract of Eastern Sussex, in the parishes of Mayfield, Waldron, and Warbleton. I do not know at what elevation above the sea this plant is found there, but presume it to be trifling.

685. PHYTEUMA ORBICULARE, *Linn.*

Area * 2 3 * * * * * * [10].
South limit in Hants, Sussex, Kent?
North limit in Wilts, Surrey, York?
Estimate of provinces 2. Estimate of counties 5.
Latitude 50—52. Germanic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Sussex (Bromfield).
Ascends to 50 or 100 yards, in England.
Range of mean annual temperature 50—49.

Native. Pascual. A plant of the chalk downs and chalk pits, reported from the six counties mentioned above; that of Kent being very probable, but cited only on old authority. From the Botanical Society of London I have received a specimen localized from Sheffield, on the authority of Mr. J. G. Lyon, and with the date of 1841. This habitat should be confirmed afresh, before the province of Humber can be taken into account in illustrating the distribution of the species, by latitude, census, &c.

687. JASIONE MONTANA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 * 15 16 * 18.
South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Moray, Argyle.
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—61. British (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 yards, in North Wales.
Range of mean annual temperature 52—45.

Native. Glareal. The distribution of this plant is peculiar, including almost all the English counties and those of the West Lowland province, with the neighbouring isles of the West Highlands, as Arran, Cantire, Islay. Elsewhere in Scotland it appears to be unknown, with two exceptions, the coast of Moray and the Shetland Islands, in which latter it is stated to be common. Under these circumstances, there may be a query whether the British or the English character prevails in its distribution. It does not clearly appear to be less frequent in the North than in the South of England, although so local in Scotland.

688. LOBELIA URENS, *Linn.*

Area 1.
South and North limits in Devon.
Estimate of provinces 1. Estimate of counties 1.
Latitude 50—51. Atlantic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to ——? Ascends to ——? (Altitude trifling).
Range of mean annual temperature, about 51—50.

Native. Ericetal. Peculiar to a single locality in the county of Devon, which is particularly described by Dr. Bromfield, in the New Botanist's Guide. So local a plant cannot properly be referred to any of the adopted types of distribution, unless on the ground of its single locality

being so clearly within the geographic limits of the Atlantic type, although so little dispersed within them. The Rev. W. R. Crotch writes to Mr. Dennes, with the date of October, 1847, that "the Lobelia urens is fast disappearing: they are enclosing the common where I gathered it before."

689. LOBELIA DORTMANNA, *Linn.*

Area * * * * 5 6 7 * * * * 12 13 * 15 16 17 18.
South limit in Glamorgan, Cardigan, Salop.
North limit in Sutherland, Hebrides.
Estimate of provinces 9. Estimate of counties 25.
Latitude 51—59. Scottish type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends below 100 yards, in England.
Ascends to 550 yards, in East Highlands.
Range of mean annual temperature 48—41.

Native. Lacustral. This plant might have been referred to the Inferarctic zone, probably, with almost as much correctness as to the Inferagrarian. It ascends to Loch Callater, in Aberdeenshire, and to Loch Brandy, in Forfarshire,—situate at the extreme limit of the agrarian region, if not rather within the lower arctic zone. On the other hand, the localities in Salop and Glamorgan can barely be held to give the species a local habitation in the lower agrarian zone. Reported from 26 counties; but I cannot confidently raise the estimated census to the next higher degree, or that of 30.

690. ERICA TETRALIX, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 750 or 800 yards, in East Highlands.
Range of mean annual temperature 52—39.

Native. Ericetal. The average limit of this shrub, in the West of Aberdeenshire, may be taken at 700 yards, in favourable situations. From this point it decreases in a westerly, as well as in a northerly direction; sinking to 600 yards in the West of Inverness-shire, and to 500 yards in the North-west of Sutherland. For some remarks on the curious variety 'E. Tetralix b. Watsoni,' of the London Catalogue, see Erica ciliaris.

690, b. ERICA MACKAII, *Hook.*

Hibernian. As several botanists still hold this to be a species distinct from Erica Tetralix, it appears better to keep the notice of the two apart. Plausible, and even reasonable, arguments may be advanced in support of either view. Not having visited the habitat myself, I can speak only from dried specimens; and some of those sent to me, as E. Mackaii (correctly, I believe), are so little distinguishable from the English E. Tetralix, that I should not have thought them worth separating therefrom as named

varieties. In short, however dissimilar in their extreme forms, the two appear to pass gradually into each other through a series of intermediate links.

691. ERICA CILIARIS, *Linn.*

Area 1 2 [3].
South limit in Cornwall.
North limit in Dorset.
Estimate of provinces 2. Estimate of counties 2.
Latitude 50—51. Atlantic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to 50 yards, more or less.
Range of mean annual temperature 52—51.

Native. Ericetal. Peculiar to the two counties above mentioned, as far as hitherto ascertained; having been first introduced into the British Floras some twenty years ago, when it was sent to Sir W. J. Hooker instead of E. vagans, by the late Rev. J. Tozer, who had been applied to for the latter, and consequently looked out for some Erica different from Tetralix and cinerea. The localities in Cornwall are variously described, but are all of them about Penryn, Truro, and St. Agnes. The Dorset locality extends, according to Dr. Salter, "throughout nearly the whole space from Arne to Corfe, a distance of fully four miles." The curiously intermediate links between this and E. Tetralix, one of which is described by Bentham as a variety ("Watsoni," DC. Prodr.) of E. ciliaris, are probably hybrid varieties. At one end of the series, they are barely distinguishable from E. Tetralix, by the slightly larger and ventricose corollas; while, at the opposite extremity, they pass into E. ciliaris almost imperceptibly. It is thus optional to

place them as varieties, under either or both of the two species. I found numerous plants, and thus obtained a series of the forms, on a heath near Truro, which was then (1831) in process of enclosure; and looking at the map, I think it must have been on the road towards Redruth; but I was an utter stranger to Truro at the time, and was strolling along whither chance might lead. The Rev. C. A. Johns has recently given me a living plant, raised from cuttings of E. Watsoni, but not exactly the form described by Bentham, taken from a single shrub of it which was found by Mr. Borrer (in 1847?) "on the right hand side of the lane which leads from the Foundry at Perran to the plantation in which E. ciliaris grows so abundantly." It is highly probable that E. ciliaris had been really known as a native many years ago, but again lost sight of until rediscovered by Mr. Tozer. In Curtis's Botanical Magazine, t. 484, it is remarked of this Heath: "C. Bauhin, mistakenly, calls it *anglica*, which has given rise to the idea of its being an English plant, but it is not." I have a specimen of true E. ciliaris, obtained by Mr. John Ellis from a garden shrub, which, he was informed, had been transplanted from a common near Farnham, in Surrey. It is probable that there was some mistake about the individual shrub, for E. ciliaris is killed down by very severe winters, in my own garden, in the same county; and it would therefore seem to require a milder climate for its natural habitat.

692. ERICA CINEREA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.

Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 750 yards, in East Highlands.
Range of mean annual temperature 52—39.

Native. Ericetal, Glareal. Apparently absent from the counties of Bedford and Huntingdon, from both of which the E. Tetralix is reported. In general, I think, E. cinerea is the more abundant of the two species, except on the wet heaths of the mountainous districts. The upper limits of both species are very uniform in respect of altitude, unless so far as varied by the nature of the ground. Passing from Scotland, E. cinerea prevails in a north-westerly direction, while E. Tetralix prevails in a more easterly direction. The former is said to be the more frequent species in Shetland, and it occurs in Faroe without E. Tetralix. Both grow in South Norway; E. Tetralix only, in Denmark and South Sweden.

693. ERICA MEDITERRANEA, *Linn.*

Area [6].

Hibernian. Incognit in Britain. In the Botanist's Guide of Turner and Dillwyn, the latter of the two authors remarks, "Dr. Turton once told me he had a wild specimen of E. mediterranea brought him, which was gathered somewhere in the neighbourhood" of Swansea, Glamorganshire. This was doubtless an error; but there is some probability that the specimen brought to Dr. Turton may have been one of Erica vagans. The present species is native in Ireland. Whether the Hibernian species is truly the Linnean E. mediterranea, I am unprepared to say. Strangely enough, Mr. Bentham unites the Irish species with E.

carnea, probably through looking only at Herbarium specimens, which are much alike; although, in a living state, the whole habit of growth of the two species, as well as their climatal requirements, are widely dissimilar.

694. ERICA VAGANS, *Linn.*

Area 1 * * * [5 6 * 8].
South limit in Cornwall, Devon?
North limit in Cornwall, or Glamorgan?
Estimate of provinces 1. Estimate of counties 1.
Latitude 50—51. Atlantic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to 50 yards, more or less.
Range of mean annual temperature 52—51.

Native. Ericetal. Only known with certainty in a few localities in Cornwall, chiefly in the Lizard. Has also been reported to occur in Devon (Miss Webster, in B. G.), Gloucester (Mr. Thomas Hancock, in Proceed. Bot. Soc. London), Worcester (Mr. E. Lees, in Mag. Nat. Hist. iv. 438, and N. B. G.), Glamorgan (B. G.), Notts (Mag. Nat. Hist. v. 549; and Miss Bell, in N. B. G.); and, under name of E. multiflora, also in Derbyshire (Pilkington, quoted in B. G.) The counties of Devon and Glamorgan are not improbable in themselves, although confirmation may be requisite.

695. CALLUNA VULGARIS, *Salisb.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.

Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 1100 yards, in East Highlands.
Range of mean annual temperature 52—36.

Native. Ericetal. I have authority for the existence of this well-known shrub in every county of Britain, with the exception of Berks, Bucks, Northampton, Radnor, Montgomery, Flint, Lincoln, Ayr, Haddington, and Linlithgow; and in half of these ten counties I have probably seen it myself. The upper line runs from 900 to 1100 yards, in the West of Aberdeenshire; on and near Ben Lawers, in Perthshire, so low as 750 to 900 yards; about Drumochter Forest, in the counties of Perth and Inverness, from 900 to 950 yards; on and about Ben Nevis, from 750 to nearly 900 yards; about 800 yards in the North-west of Sutherland. Mr. A. Petermann gives me the altitudes of 2334 and 2328 feet, on Stob Choressan and Sgur Ghaoire, two mountains near Ben Nevis.

696. MENZIESIA CÆRULEA, *Sm.*

Area * * * * * * * * * * * * * * * 15 [16].
South and North limits in Perthshire.
Estimate of provinces 1. Estimate of counties 1.
Latitude 56—57. Highland type of distribution.
Arctic region. Midarctic zone.
Descends —— ? Ascends —— ? (About 900 yards.)
Range of mean annual temperature, say 38.

Native. Ericetal. An extremely rare shrub in Britain, if not quite extinct now in the only certain locality which has been clearly ascertained for it; namely, on a hill, called

Athole Sow, in the North of Perthshire. The hill rather exceeds 900 yards in elevation, and I understand that the plant was found near the summit. Mr. W. Brand described the locality in the New Botanist's Guide. It has also been reported to grow on the Isles of Shiant, in the group of Outer Hebrides; but apparently through some error or misinformation. See Balfour and Babington's Account of the Vegetation of the Outer Hebrides, page 11.

697. MENZIESIA POLIFOLIA, *Juss.*

Area [5].

Hibernian. Incognit in Britain. This was doubtfully recorded in the New Botanist's Guide, as having been found by Mr. Edwin Lees on the Upper Bromsgrove Lickey, Worcestershire; and also as having been reported to occur in Sherwood Forest, Notts. The former habitat was doubtless erroneous; and if really found in the latter, the species must have been introduced. It is too impatient of severe frost to bear the winters of Sherwood Forest, as a genuine native. But it is truly indigenous in Ireland.

698. AZALEA PROCUMBENS, *Linn.*

Area * * * * * * * * * * * * * * * 15 16 17 18.
South limit in Stirling, Perth, Forfar.
North limit in Shetland, Orkney, Sutherland.
Estimate of provinces 4. Estimate of counties 12.
Latitude 56—61. Highland type of distribution.
Arctic region. Midarctic—Superarctic zones.
Descends to 500 yards, in North Highlands.
Ascends to 1150 or 1200 yards, in East Highlands.

Range of mean annual temperature 42—35.

Native. Ericetal, Glareal. Reported to occur in the counties of Stirling, Perth, Forfar, Aberdeen, Banff, Moray, Argyle, West-Inverness, Ross, Sutherland, Orkney, and Shetland. To these twelve, perhaps, some of the four following will eventually be added; namely, Dumbarton, Kincardine, Caithness, or Hebrides; indeed that of Dumbarton has been recorded (N. B. G.) The lower limit of this little shrub, serving well to mark the commencement of the Mid-agrarian zone in many places, may be taken at 700 to 750 yards along the eastern and central Grampians; at 650 to 700 yards about Ben Nevis; at 500 yards in Sutherland; and lower considerably in Shetland, probably about 400 yards.

699. ANDROMEDA POLIFOLIA, *Linn.*

Area 1 * 3 4 5 6 7 8 9 10 11 12 13 * 15.

South limit in Somerset, Bucks? Hunts, Norfolk.

North limit in Perth, Renfrew, Northumberland.

Estimate of provinces 13. Estimate of counties 25.

Latitude 51—57. Scottish type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in Somerset.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 49—46.

Native. Ericetal, Uliginal. The distribution of this little shrub is peculiar in Britain, whether compared with that of other species which are assigned to the Scottish type, or with its distribution on the continent of Europe. It differs from the usual character of the Scottish or boreal type, by its early northern limit, and by its apparent absence from the eastern provinces of Scotland, excepting

the most westerly part of the East-Highland province; and the latter peculiarity contrasts strongly against the diffusion of the species throughout Scandinavia, as indicated by Fries. It is, in fact, a plant of Middle Britain. Winch says that it occurs in the North of England, from 250 to 2000 feet above the sea. But he gives no locality in his Flora of Northumberland and Durham, or in his Contributions to Cumberland, which can justify any such altitude as 2000 feet.

700. ARBUTUS ALPINA, *Linn.*

Area * * * * * * * * * * * * * * * 15 16 17 18.
South limit in Forfar, West-Inverness (Nevis and Skye).
North limit in Shetland, Orkney, Sutherland.
Estimate of provinces 4. Estimate of counties 7.
Latitude 56—61. Highland type of distribution.
A. A. regions. Superagrarian—Superarctic zones.
Descends to the coast level, in North Highlands.
Ascends to 900 yards, in same province.
Range of mean annual temperature 46—36.
Native. Ericetal. To the five counties above mentioned the intermediate Moray and Ross may be added. It is now supposed that the alleged habitat in the Isle of Mull ought to have been given for the other and more frequent species.
Descends but slightly within the agrarian region.

701. ARBUTUS UVA-URSI, *Linn.*

Area * * * * [5 * * 8 9] 10 11 12 * 14 15 16 17 18.
South limit in York, Westmoreland, Cumberland.
North limit in Shetland, Orkney, Caithness.

Estimate of provinces 8. Estimate of counties 20.
Latitude 54 (53)—61. Highland type of distribution.
A. A. regions. Superagrarian—Midarctic zones.
Descends to the coast level, in the West Highlands.
Ascends to 900 or 950 yards, in East Highlands.
Range of mean annual temperature 47—37.

Native. Ericetal. One of the connecting links between the Highland and Scottish types of distribution. It has been said to grow in the counties of Salop (Aiken), Stafford (Anon., in Garner N. H. S.), Derby (Howard, in B. G.), Chester (Bradbury; in B. G.), Lancaster (Ray); but none of these can be taken as clearly established habitats, and not unlikely Vaccinium Vitis-Idæa may occasionally have been mistaken for this shrub.

702. ARBUTUS UNEDO, *Linn.*

Hibernian. Opinions differ as to whether this beautiful shrub is truly and aboriginally native of Ireland. Formerly, it was considered to be of monastic introduction; latterly, opinion seems leaning towards the admission of its genuine nativity.

LEDUM PALUSTRE, *Linn.*

Incognit. Unfortunately figured in English Botany as a native of Ireland, on testimony which did not merit the credence given to it. There is no sufficient ground for supposing that any wild example of this shrub was ever found in Ireland.

703. VACCINIUM MYRTILLUS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 75.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Superarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 1350 or 1400 yards, in East Highlands.
Range of mean annual temperature 51—33.

Native. Ericetal, Sylvestral. A rare plant in the province of Ouse, and counties adjacent thereto; and yet from its abundance on the mountains and moors, and in many woods, it may properly be pronounced a very common British species, although becoming scarce in the east or south-east of England. It endures the exposure of the higher mountain summits, above 1000 or 1200 yards, better than any other shrub except the Salix herbacea; though usually it is very dwarf and depressed in such situations.

704. VACCINIUM ULIGINOSUM, *Linn.*

Area * * * * * * [7 * * 10] 11 12 * * 15 16 17 18.
South lim. in [Caernarvon? Denbigh?] Durham, Westmd.
North limit in Shetland, Sutherland.
Estimate of provinces 6. Estimate of counties 15.
Latitude 54 (53)—61. Highland type of distribution.
A. A. regions. Superagrarian—Superarctic zones.
Descends to 200 yards, more or less, in North England.
Ascends to 1100 yards, in East Highlands.

Range of mean annual temperature 45—35.

Native. Ericetal, Uliginal. According to Aiken, Bingley, and Griffith, this shrub is found in woods near Llanrwst, but whether on the Caernarvonshire or Denbighshire side of the stream does not appear; and it would be desirable to have the habitat confirmed by some competent botanist of the present time. It occurs on Teesdale, and thus finds place in the Flora of Yorkshire; but whether truly within that county I am unprepared to say. If within the boundary of Yorkshire, the provincial estimate must be raised to 7, and the Humber province be no longer excluded.

705. VACCINIUM VITIS-IDÆA, *Linn.*

Area [1 2 3] * 5 6 7 8 9 10 11 12 13 14 15 16 17 18.

South limit in Glamorgan, Worcester, Warwick, Notts.

North limit in the Hebrides, Sutherland.

Estimate of provinces 14. Estimate of counties 50.

Latitude 51—59. Highland type of distribution.

A. A. regions. Superagrarian—Superarctic zones.

Descends to 100 yards, or lower, in Mersey.

Ascends to 1100 yards, in East Highlands.

Range of mean annual temperature 47—35.

Native. Ericetal, Rupestral. An example of the Highland type passing into the Scottish. It has been recorded from Somerset (Mr. Dyer, in B. G.), Dorset or Hants (Within 30 miles from Poole: Salter's Bot.), and Kent (Blackstone, cited in B. G.); but these authorities are insufficient where the species is in itself unlikely to occur. Perhaps it should be considered as descending within the midagrarian zone.

706. VACCINIUM OXYCOCCUS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 * 17.
South limit in Somerset, Isle of Wight, Sussex.
North limit in Ross, Aberdeen, Renfrew.
Estimate of provinces 17. Estimate of counties 50.
Latitude 50—58. Scottish (?) type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 800 yards, in East Highlands.
Range of mean annual temperature 50—38.

Native. Uliginal. Thinly scattered, though widely diffused through the chief part of Britain; and probably now rendered much less plentiful than formerly, through drainage and inclosure of the waste lands. Notwithstanding its occurrence in some of the southern counties of England, in few localities, its decidedly greater prevalence in the northern provinces may warrant its assignment to the Scottish, rather than to the British type of distribution. A rare plant of the Highland provinces, where its ascertained western boundary would be marked by a line from Renfrew, through Stirling, Perth, and Moray, into the East of Rossshire; so that at present it seems quite unknown in the West-Highland province, where its occurrence may still be expected, however sparingly.

VACCINIUM MACROCARPUM, *Ait.*

Area (7).

Alien. Found by Dr. Bidwell, on Soughton bog, in the neighbourhood of Mold, Flintshire; to which, it seems

reasonable to infer, the plant had been purposely introduced by some person, for use or ornament.

707. PYROLA ROTUNDIFOLIA, *Linn.*

Area [1 2 3] 4 [5] * *.* 9 10 11 [12 13] 14 15 * * [18].
South limit in Kent? Suffolk, Norfolk.
North limit in Moray, Forfar, Perth, Fife.
Estimate of provinces 6. Estimate of counties 12.
Latitude 52—58. Scottish type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in Ouse province.
Ascends to 800 yards, in East Highlands.
Range of mean annual temperature 49—39.

Native. Sylvestral, &c. The name of this present species has been so frequently given to specimens of P. media and P. minor, that comparatively few of the recorded localities can be relied upon as certainly correct. In addition to the counties mentioned above, it is probable that those of Lancaster, York, Durham, Northumberland, and perhaps Berwick, may be trusted. But those of Devon, Sussex, Oxford, Gloucester, Worcester, Salop, Stafford, Westmoreland, Cumberland, Lanark, Edinburgh, Aberdeen, Orkney, and Shetland, are all of them to be distrusted; and, probably, most of them are erroneously recorded for P. rotundifolia. I have only once met with it at a considerable elevation, namely, in Glen Clova, Forfarshire; and the altitude there has been estimated, from no very precise data, at 800 yards.

708. PYROLA MEDIA, *Swtz.*

Area * * [3] * 5 * * * [9] 10 11 12 13 14 15 16 17 18.
South limit in Worcester, —— ?
North limit in Shetland, —— ?
Estimate of provinces 11. Estimate of counties 25.
Latitude 52—61. Scottish type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Highlands.
Ascends to 600 yards, in East Highlands.
Range of mean annual temperature 48—40.

Native. Ericetal. The specimens of this species have been usually referred either to P. rotundifolia or to P. minor, at least, until recently. I am indebted to Mr. C. Prentice for a specimen from the neighbourhood of Bewdley, in Worcestershire; but whether the locality itself is strictly within the same county, I do not know. I suppose that the counties of York (R. Leyland!), Durham, Northumberland, Cumberland, Berwick, Roxburgh, the neighbourhood of Edinburgh and Glasgow (but in which counties?), and also most of the Highland counties may be relied upon. Those of Oxford, Bucks, Warwick, Stafford, and Lancaster, will require verification. It is this species which was intended under the name of "rotundifolia," in Edmondston's list of Shetland plants, published in the Annals; and probably the same correction should be made in reference to the alleged P. "rotundifolia" of Orkney.

709. PYROLA MINOR, *Linn.*

Area * 2 3 4 5 6 7 8 * 10 11 12 13 14 15 16 17.
South limit in Hants, [Devon? Sussex? Kent?]

North limit in Ross, Skye, Aberdeen.
Estimate of provinces 15. Estimate of counties 40.
Latitude 51 (50)—58. Scottish type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends almost to the coast level, in South of England.
Ascends to 500 yards, in East Highlands.
Range of mean annual temperature 50—41.

Native. Sylvestral, Ericetal. Whilst P. rotundifolia has been made to appear more frequent than the reality, the present one has been likely brought lower in the scale of its frequency, through several of its habitats having been assigned to other species. P. rotundifolia is said to have occurred very locally in North Devon and South Kent, and P. secunda in Sussex; but P. minor appears to be the more likely species. Specimens of this present species are in my herbarium from the counties of Gloucester (Mr. Stephens, Bot. Soc. London), Oxford (Dr. Ayres, Bot. Soc. London), and Surrey (Mr. John Ellis); and also from various counties more northerly than those three. I possess no note of seeing P. minor at any elevation greater than 500 yards; but think that I must have seen it to the inferarctic zone, at least.

710. PYROLA SECUNDA, *Linn.*

Area * [2] * * * * * * * 10 11 12 13 * 15 16 17.
S. limit in Cumberland, N. E. Yorkshire (Rev. G. Pinder).
North limit in Ross, Aberdeen, Argyle.
Estimate of provinces 7. Estimate of counties 12.
Latitude 54—58. Highland type of distribution.
A.A. regions. Superagrarian—Inferarctic zones.
Descends to the coast level, in Moray.
Ascends to 650 yards, in East Highlands.

Range of mean annual temperature 47—40.

Native. Sylvestral, Rupestral. A local species. I have seen it in Cumberland, Perth, Forfar, Aberdeen. The Rev. G. Gordon reports it from Banff, Moray, Ross. On old authority it was recorded in Argyle, Dumfries, Northumberland, York; and the two latter have been confirmed by Dr. Johnston, who is said to have found the species on Yevering Bell, one of the Cheviot hills, and by the Rev. George Pinder, who lately discovered it near Sedbergh. It is recorded also for Sussex, in the New Botanist's Guide, on such good authority as that of Mr. Borrer; but the county itself appears so unlikely, for a species otherwise quite boreal and montane, that I hesitate to rely upon the record. I think it rises to a higher elevation than above indicated, and probably into the midarctic zone.

711. PYROLA UNIFLORA, *Linn.*

Area * * * * * * * * * * * [12] * * 15 * 17 18.
South limit in Perth, Forfar? Banff, Moray.
North limit in Hebrides, S.E. Sutherland, Ross.
Estimate of provinces 3. Estimate of counties 8.
Latitude 56—58. Scottish type of distribution.
Agrarian region. Superagrarian zone.
Descends to the coast level, or nearly so.
Ascends to 100 yards, more or less.
Range of mean annual temperature 47—46.

Native. Sylvestral. A very scarce plant in Scotland; recorded from the seven counties above named. Its occurrence in Forfarshire is recorded solely by G. Don, who indicates the vague and probably false habitat of "summits of the Clova Mountains." Mr. Borrer recorded it

as having been found at Bardsea, near Ulverstone, in the Lake province, where he sought it unsuccessfully, notwithstanding " a very particular direction," by Wright, of Keswick. It is much to be wished that botanists would make a rule never to pay guides for directions or guidance to localities, unless im those cases where the locality is actually shown or found, and appears satisfactory when seen. Perhaps the Perthshire locality, " Scone," may be deemed just within the midagrarian zone.

712. MONOTROPA HYPOPITYS, *Linn.*

Area 1 2 3 4 5 6 * 8 9 10 11 12 * * 15.
South limit in Somerset, Dorset, Wight, Kent.
North limit in Moray, Westmoreland, Northumberland.
Estimate of provinces 12. Estimate of counties 30.
Latitude 50—58. English type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, or nearly so, in Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Sylvestral. Rather inclining to the Germanic type of distribution. Chiefly in the southern provinces of England; and, in the present day, only known in a single county in Scotland, the far northern one of Nairn; although it is supposed that Lightfoot may have seen it elsewhere in Scotland. The provinces of South Wales, Tyne, and Lakes, each rest on single and scarcely sufficient authority.

713. ILEX AQUIFOLIUM, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Hebrides, North Sutherland.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—59. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 500 yards, in province of Lakes.
Range of mean annual temperature 52—43.

Native. Sylvestral, Septal. Absent from Shetland and Orkney, and possibly from two or three others of the Scottish counties. Balfour and Babington give one locality in the Hebrides; namely, near Roddal, in Harris. I did not observe it in crossing Ross and Caithness; neither does Mr. Gordon enumerate it in the list of species known in the former of these two counties. It occurs at 350 yards, or upwards, in Forfarshire.

714. LIGUSTRUM VULGARE, *Linn.*

Area 1 2 3 4 5 6 7 8 (9) 10 11 (12 13 14 15 16).
South limit in Cornwall, Isle of Wight, Kent.
North limit in Durham, York, —— ?
Estimate of provinces 10. Estimate of counties 40.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 150 yards, in province of Humber.
Range of mean annual temperature 52—47.

Native. Rupestral, Sylvestral, &c. The Privet is so frequently planted for hedges, or for ornament in shrubberies, that its natural limit in Britain can now scarcely be traced with certainty. Mr. R. B. Bowman and other botanists have deemed it truly wild on the coast of Durham; and Mr. Tatham says that it is abundant on limestone cliffs about Settle. Judging by the altitude of Settle, this shrub must rise almost to the superagrarian zone, and may perhaps thrive in a lower temperature than the degree of 47 indicated above.

715. FRAXINUS EXCELSIOR, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 (18).
South limit in Cornwall, Isle of Wight, Kent.
North limit in Ross, West Inverness, Aberdeen.
Estimate of provinces 17. Estimate of counties 75.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 yards, in province of Lakes.
Range of mean annual temperature 52—45.

Native. Sylvestral, Septal. Although this tree grows well even to the north of Sutherland, I did not observe it either in that county or Caithness, except in spots where it appeared to have been planted. Balfour and Babington enumerate the Fraxinus among the species seen by them in the Hebrides, though as seen only in the glen of Roddal, in Harris. But at page 7 of their Remarks introductory to their list of species, they observe, "In the glen at Roddal, there is an extensive plantation of Fraxinus excelsior, Quercus Robur, Pyrus aucuparia, and Acer Pseudo-Platanus." It is impossible to decide from these

records, whether the Ash is planted only, or native and planted, near Roddal. It grows pretty well to 300 or 400 yards in the Highland valleys, but probably planted.

716. VINCA MINOR, *Linn.*

Area 1 2 3 4 5 6 7 (8 9 10 11 12 13 14 15).
South limit in Devon, Isle of Wight, Kent.
North limit in Montgomery, Stafford, Norfolk.
Estimate of provinces 7. Estimate of counties 20.
Latitude 50—53. English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—48.

Denizen. Sylvestral, Septal. Much difference of opinion has prevailed with reference to the genuine nativity of this species in Britain. It is recorded in forty counties, or upwards; but in at least the half of this number, it is only mentioned in terms which imply, or directly express, distrust of the natural origin of its localities. I have myself seen the species in various places, from Devon and Surrey northward to Edinburgh; and in every place the presumption seemed to be stronger against, than in countenance of, its aboriginal nativity. Still, so many other botanists have regarded the species as being truly wild, in the south of England, that I feel constrained to take it out of the Alien class. Passing northwards, from Montgomery and Norfolk, the habitats become more and more distrusted, and are confessed to be so even by the botanists who "discover" them; until, in Scotland, scarcely any local writer pretends to pronounce it a true native. The compilers of the Edinburgh Society's Catalogue, however,

give it as a native of their district, and even mark it as being second only to the class of the most common species, in regard to its frequency. My own experience, from not few botanical rambles around Edinburgh, is directly opposed to both these views; and I should have deemed it neither frequent nor native; unless, indeed, we are to include in the census its localities in gardens and ornamental plantations. Twice in the county of Surrey, I have found unrecorded localities, which had at first very much the appearance of being genuine wild habitats; but careful investigation and historical inquiry afterwards led to change of opinion, by showing that gardens or shrubberies had once, though long ago, existed there. Taking into account the rapid rate of increase, and hardy character of the species, it is just the sort of plant that might be expected to prevail a hundred times more abundantly than is the case now, if an aboriginal native. Under the circumstances, the northern limit, range of latitude, &c., may be considered almost optional or arbitrary. It occurs in Holland, Hanover, and the South of Denmark, as a reputed native, which is some evidence for the probability of the species being natural to England also.

717. VINCA MAJOR, *Linn.*

Area (1 2 3 4 5 6 7 8 * 10 * 12 13 14 15).

Alien. Like the smaller species, this also has been recorded from about forty counties; but I am not aware that any botanist of authority in such a question, has yet constituted himself the champion for its nativity.

GENTIANA ACAULIS, *Linn.*

Area [6 * * 9].

Incognit. The inclusion of this species in the lists of our native plants, on the most unsatisfactory evidence, might be cited to show that influential and leading botanists of some half century ago were quite as hasty in such matters, as are the most shallow pretenders and would-be-thought discoverers of the present time. It was stated to have been found wild near Haverfordwest, in Pembrokeshire, by a Frenchman, M. de St. Amans, early in the present century. Quite recently, the same species has been again announced from another, and still less credible habitat, by Mr. J. Sidebotham, a contributor to the Phytologist, upon the precision of whose statements in matters of science I feel myself unable to place reliance. The following is his account:—"Mr. Townley, of Manchester, gathered this plant several times on sand-hills near Liverpool, where he described it as growing in abundance, far apart from any cultivation. I have seen and possess some of his specimens which were brought in a living state to the late Mr. Crozier." (Phytol. iii. 71.) In all likelihood there was a misnomer of the species. It is difficult to believe that so showy a plant could be abundant on the sand-hills near Liverpool, and yet remain unknown to the botanists of that town and neighbourhood. Moreover, sand-hills "near Liverpool," and at the same time "far apart from any cultivation," would be almost as difficult to find, as the Gentiana acaulis itself will prove to be. G. Pneumonanthe occurs in different spots in the vicinity of Liverpool, and the two commoner species also.

718. GENTIANA VERNA, *Linn.*

Area * * [3] * * * * * * 10 11 12.
South limit in York, North Lancashire?
North limit in Durham, Westmoreland?
Estimate of provinces 3. Estimate of counties 3.
Latitude 54—55. Local type of distribution.
A. A. regions. Superagrarian—Inferarctic zones.
Descends to 300 or 400 yards, more or less.
Ascends to 850 yards, in Humber (J. Backhouse).
Range of mean annual temperature 44—40.

Native. Pascual? Having never visited the localities of this species, I am unable to fix its geographical relations with sufficient exactness, from the information recorded by other botanists. On the authority of Mr. R. Chambers, (Mag. Nat. Hist. n. s. ii. 38), it was found in "chalky meadows between Tring and Aston Clinton;" but some mistake of the species doubtless occurred. It has been collected by numerous botanists in Teesdale, and apparently both on the Yorkshire and Durham sides of the Tees river. In Jopling's Sketch of Furness and Cartmell, Mr. Aiton states that it has been found among the hills in the North of Furness,—a northern portion of Lancashire, physically belonging to the Lake province, and therefore considered as part of Westmoreland in this work. And the Rev. J. Harriman recorded (B.G.) the locality of Birkdale, in the parish of Appleby. Sir Walter Trevelyan informed me that it occurs in the superagrarian zone ("upland zone," of the Outlines); and Mr. James Backhouse, in Phytologist, i. 893, mentions that "the top of Mickle-fell (the highest mountain in Yorkshire, being 2600 feet above the sea) is limestone covered with grass, thickly

interspersed with Gentiana verna." A summit of that altitude, in the latitude of Yorkshire, may be held to come slightly within the midarctic zone.

719. GENTIANA PNEUMONANTHE, *Linn.*

Area * 2 [3] 4 * 6 7 8 9 10 * 12.
South limit in Dorset, Hants, Sussex.
North limit in Westmoreland, York.
Estimate of provinces 8. Estimate of counties 15.
Latitude 50—55. English (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in Channel province.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 50—47.

Native. Ericetal, Uliginal. Nearer to the English type than any other, although rather curiously inclining also towards the opposite or Scottish type of distribution, by its greater frequency in some of the northern counties of England, and its rarity in the middle and southern counties. It occurs in Dorset, South-west Hants, Sussex, Suffolk (now extinct ?), Norfolk, Caermarthen, Anglesea, Leicester, Lincoln, Notts, Derby (extinct ?), Chester, Lancaster, York, Westmoreland, Cumberland. In addition, the counties of Kent, Surrey, and Middlesex, are also on record; the first, on account of the species being found near Tonbridge Wells, but the locality is really within Sussex; the second, through a mistake, between Clapham in Yorkshire, and the place so named in Surrey; the third, on the authority of Dr. Goodenough, may have been correct, but the present existence of the species on Hounslow Heath must be considered to require verification. This is one of the few species enumerated by Professor Edward

Forbes, as being characteristic of his South-eastern flora. And yet, in truth, very few of its localities do occur within the space assigned for that "flora" in his coloured map. How is this contradiction to be accounted for? Simply, I believe, by the intimation already given on page 470 of the former volume of this work; namely, that Professor Forbes's mode of learning and citing facts in British geographical botany, was, by turning over the pages of Babington's Manual, and *guessing* that the species distinguished by the letter "E" (England, only) would be found restricted to, or prevailing in, the South-east angle of England, unless some contrary intimation was set forth in that Manual, as is usually done in the instance of South-western species. Such a peculiar mode of getting up evidence for a hasty hypothesis, was almost certain to lead into egregious errors and the betrayal of itself. Accordingly, the Gentiana Pneumonanthe is not a solitary instance of mis-illustration, but one that could be matched by various others of similar character. '*Ex uno disce omnes*' may be replied to the anonymous writer in the Gardener's Chronicle, who so injudiciously endeavoured to shield Mr. Forbes, by making a false representation of the charge conveyed in an appendix to the former volume of the Cybele Britannica; a charge which remains still unanswered, and is unanswerable. No second mention of the matter might have been made in this work, if Mr. Forbes could have kept such friends from meddling, whether done ignorantly or mendaciously, to his own further disadvantage.

720. GENTIANA NIVALIS, *Linn.*

Area * * * * * * * * * * * * * * * 15 [16].
South limit in Perth, Forfar.

North limit in the same counties.

Estimate of provinces 1. Estimate of counties 2.

Latitude 56—57. Highland type of distribution.

Arctic region. Midarctic—Superarctic zones.

Descends to 850 or 800 yards, in East Highlands.

Ascends to 1250 or 1300 yards, in same province.

Range of mean annual temperature 38—35.

Native. Rupestral. Only known to occur certainly within the two counties above mentioned. The altitude of the few stations has not been precisely ascertained. I estimated the height of the only spot on which it was seen by myself, in Canlochen Glen, Forfarshire, at upwards of 800 yards. Professor Graham says, "near the summit of Ben Lawers," and Mr. W. Wilson observed it "below the summit" of the same hill; and that mountain being usually considered about 4000 feet high, the upper limit of the species would seem to exceed 1200 yards, at the least. In the New Botanist's Guide, the county of Inverness is mentioned for Gentiana nivalis, on the authority of an Inaugural Essay by Dr. Boué. I have no copy of that essay, from which I took notes in Edinburgh, many years ago; and am now unaware whether Boué quotes any authority for the county in question. As a foreigner, only temporarily in Scotland, much exactness could not be expected in his essay on the geographical botany of the country, at a time, too, when published records were few and uncertain.

721. GENTIANA AMARELLA, *Linn.*

721, b. GENTIANA GERMANICA, *Willd.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 * 14 15 16 17 18.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Caithness, Sutherland.
Estimate of provinces 17. Estimate of counties 60.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 200 yards, more or less, in England.
Range of mean annual temperature 52—45.

Native. Pascual, Glareal. I do not recollect to have myself seen this species anywhere above 500 feet of elevation; but in some of its recorded habitats, as in Teesdale Forest, it may probably be found much higher. The G. germanica has been reported from the counties of Hants, Berks, Herts, Pembroke, and York.

722. GENTIANA CAMPESTRIS, *Linn.*

Area general.
South limit in Cornwall, Dorset, Sussex, Kent?
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 70.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 800 or 850 yards, in East Highlands.
Range of mean annual temperature 52—39.

Native. Pascual. My data, published and unpublished, show this species in sixty counties; two or three of which are probably erroneous, through mistakes between G. Amarella and the present species. About ten other counties seem likely to produce it, among those for the plants of which we possess the least ample catalogues. I think it is rare above the limits of the inferarctic region; but as it grows with Astragalus alpinus in Aberdeenshire, and also

with Gentiana nivalis and Sonchus alpinus in Forfarshire (Mr. W. Brand), it must be considered a midarctic plant.

723. CICENDIA FILIFORMIS, *Reich.*

Area 1 2 [3].
South limit in Cornwall, Devon, Dorset, S.W. Hants.
North limit in same counties, and Sussex.
Estimate of provinces 2. Estimate of counties 5.
Latitude 50—52. English (?) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to 50 yards, more or less, in England.
Range of mean annual temperature 52—49.

Native. Ericetal, Uliginal. Recorded only in the five counties mentioned above, and in Cooper's general list of Metropolitan plants; the latter being very likely an error. As the Sussex localities would seem to be a little to the northward of the line which bounds the fifty-first degree of latitude, it is necessary to include the next, or fifty-second degree, in its latitudinal range, in conformity with the rule explained on page 60 of the former volume. It seems optional whether this should be considered an example of the English or of the Atlantic type of distribution.

724. ERYTHRÆA CENTAURIUM, *Linn.*
724, d. ERYTHRÆA LATIFOLIA, *Sm.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Hebrides.
Estimate of provinces 18. Estimate of counties 80.

Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—45.

Native. Pascual, Glareal. Rather a rare plant in the four northern provinces of Scotland, where it appears chiefly restricted to the neighbourhood of the coast. Only one locality is mentioned for it in the Flora of Shetland; and it is quite omitted in that of Orkney. By its wide area, it must be considered as belonging to the British type; while, by its infrequency in the northerly provinces, it so far inclines towards the English type of distribution. As to E. latifolia,—there is such great uncertainty about most of the localities recorded for it, whether they belong only to broad-leaved states of E. Centaurium, or to something really distinguishable therefrom, that I feel quite unprepared to treat its distribution separately. By name, it is reported from provinces 1, 6, 7, 9, 11, 12, 16.

724, b. ERYTHRÆA LITTORALIS, *Sm.*

Area 1 2 * * * 6 7 * 9 * 11 12 13 14 15 16 * 18.
South limit in Cornwall, Isle of Wight, Sussex.
North limit in Shetland, Hebrides.
Estimate of provinces 12. Estimate of counties 30.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends, at the coast level, to Shetland.
Range of mean annual temperature 52—45.

Native. Littoral. Probably the E. littoralis of English botanists is made up from two different forms,—perhaps,

species; the one being the narrow-leaved E. linarifolia; the other, a dwarf variety of E. Centaurium, with leaves more or less elliptic. I am quite unprepared to separate their recorded localities; and I still incline to the belief, although without any confident conviction, that both forms are truly varieties of E. Centaurium.

724, c. ERYTHRÆA PULCHELLA, "*Fries.*"

Area 1 2 3 4 * 6 7 * 9 10 * * 13 [14].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Dumfries, Lancaster, York.
Estimate of provinces 10. Estimate of counties 25.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—48.
Native. Pascual, Glareal. This looks more like a distinct species, than either E. littoralis or E. latifolia; and yet I have seen occasional examples of E. Centaurium approximating so closely to those of E. pulchella, as to interfere much with any settled conviction of their specific distinctness. Perhaps some few of the littoral localities reported for the present plant, may belong really to the dwarf form mentioned under E. littoralis.

725. CHLORA PERFOLIATA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 [11 12].
South limit in Devon, Isle of Wight, Kent.
North limit in York, Lancaster.

Estimate of provinces 10. Estimate of counties 40.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—48.

Native. Pascual, Rupestral. Winch quotes Wallis as the only authority for the occurrence of the Chlora in the province of Tyne, and refers to Hutchinson, in like manner, for that of the Lakes. Until verified by some good botanist of our own day, it would seem better to reject the two most northerly provinces of England; difficult, though it might be, to specify any other English plant as one likely to be mistaken for the Chlora.

SWERTIA PERENNIS, *Linn.*

Area [6 or 7].

Incognit. This has been recorded among British plants, as having been found in Wales. Some mistake of the plant is to be apprehended; and it seems not very improbable that luxuriant examples of Gentiana Pneumonanthe might be thus misnamed.

726. VILLARSIA NYMPHÆOIDES, *Vent.*

Area * 2 3 4 5 * * (8 9 10 11 12 13 14 15).
South limit in Sussex, Berks, Gloucester.
North limit in Norfolk, Cambridge, Northampton.
Estimate of provinces 4. Estimate of counties 12.
Latitude 50—53. Germanic type of distribution.
Agrarian region. Inferagrarian zone.

Descends to the coast level, in Channel province.

Ascends to 50 or 100 yards, in England.

Range of mean annual temperature 50—48.

Native. Lacustral. In addition to the six counties mentioned above, the Villarsia occurs wild in Surrey, Oxford, Bucks, Middlesex, Essex, and Huntingdon. It is also reported in Packington Park, in Warwickshire, and in the lake at Welbeck, in Nottinghamshire; to both of which, I should suspect, it may have been introduced. Besides these counties, it is recorded for Stafford, Lancaster, York, Northumberland, Westmoreland, Cumberland (falsehood?), Lanark, Berwick, and Perth; to all of which it has doubtless been introduced, if (with reference particularly to Cumberland) found there at all.

727. MENYANTHES TRIFOLIATA, *Linn.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Orkney, Hebrides.

Estimate of provinces 18. Estimate of counties 82.

Latitude 50—61. British type of distribution.

A. A. regions. Inferagrarian—Inferarctic zones.

Descends to the coast level, in the Peninsula.

Ascends to 600 yards, in province of Lakes.

Range of mean annual temperature 52—41.

Native. Uliginal, Paludal. Possibly the full comital census of 82 may be rather too high for this plant. My notes afford authorities for its existence in sixty counties, and I cannot select any one among the remaining twenty-two, which may be deemed more likely to be destitute of the Menyanthes than to produce it. I have seen it above 500, but not up to 600 yards, in the Scottish Highlands.

728. POLEMONIUM CÆRULEUM, *Linn.*

Area * (2 3 * 5 * 7) 8 * 10 (11) 12 (13 14 15 16).
South limit in Derbyshire.
North limit in Yorkshire, Westmoreland.
Estimate of provinces 3. Estimate of counties 3.
Latitude 53—55. Local type of distribution.
Agrarian region. Midagrarian—Superagrarian zones.
Descends to 150 yards, more or less, in Trent.
Ascends to 300 yards, more or less, in Humber.
Range of mean annual temperature, say 46—45.
Native. Rupestral, &c. There is difficulty and uncertainty in attempting to illustrate the distribution of this plant by the fixed formula. It has become established, more or less completely, in many spots where we cannot regard it as otherwise than introduced; and besides the uncertainty which must arise from this circumstance, I feel very imperfectly prepared to state its range of altitude, and consequently that of climate, in the provinces where it may be pronounced certainly indigenous.

729. CONVOLVULUS ARVENSIS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 * * 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Moray, Aberdeen.
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Channel.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—46.

Native. Glareal, Agrestal, Septal. Apparently quite local in Scotland, except in the north-eastern counties. Orkney, on the authority of Dr. Neill, is the only habitat I am aware of in Scotland, to the north and west of Moray, Stirling, and Renfrew. Abundant in the south of England. Thus, by area and latitudinal range, it comes nearest the British or general type; while by the wide difference in comparative frequency in the southern and northern provinces, it corresponds closely with the English type of distribution.

730. CONVOLVULUS SEPIUM, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Forfar, Argyle.
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—58. English type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Septal, Paludal. Abundant in the southern provinces of England; very local in Scotland, and possibly not truly native beyond the latitudinal parallel of 56 or 57. Said to be frequent about Glasgow (Flo. Glott.), rather rare about Edinburgh (Cat. B. S. Ed.), absent from the neighbourhood of Aberdeen (Flo. Abred.), and reported from single localities only in the Floras of Forfar and Moray. Thus, it approximates more closely to the English or southern type of distribution, than the rather commoner species, C. arvensis.

731. CONVOLVULUS SOLDANELLA, *Linn.*

Area 1 2 3 4 * 6 7 * 9 * 11 12 13 * * 16.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Argyle, Forfar, "The Elg."
Estimate of provinces 11. Estimate of counties 25.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends, at the coast level, to the Highlands.
Range of mean annual temperature 52—48.
Native. Littoral. Perhaps thirty counties might prove the more correct estimate for the present species, which is already known in twenty-four.

732. CUSCUTA EUROPÆA, *Linn.*

Area 1 2 3 4 5 * * 8 9 10 * * [13 * 15].
South limit in Somerset, Dorset, Isle of Wight, Kent.
North limit in York, Lancaster?
Estimate of provinces 8. Estimate of counties 25.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in Channel province.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—48.
Native. Septal, &c. (parasitic). In illustrating the distribution of this species it has appeared proper to reject all the habitats where "C. europæa," so called, is expressly stated to grow on flax or on clover; the presumption being very strong that the species really intended in such cases was C. Epilinum or C. Trifolii.

733. CUSCUTA EPILINUM, *Weihe.*

Area 1 * 3 * 5 * 7 * * * * * 13 14 15 16 17.
South limit in Somerset, Essex, —— ?
North limit in Ross, Aberdeen, Argyle.
Estimate of provinces 10. Estimate of counties 20.
Latitude 51—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in England.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 50—47.
Colonist. Agrestal (parasitic). As the occurrence of this species in any part of Britain, appears to be wholly dependent on the cultivation or accidental sowing of flax, its actual distribution must be artificial and changeable. For example, I have once met with the species in North Surrey, growing among less than a dozen plants of the flax, by a public highway; where, in all probability, the seeds of the flax had been scattered by some bird-catcher, and of course the locality was only a temporary one.

734. CUSCUTA EPITHYMUM, *Sm.*

Area 1 2 3 4 5 * 7 8 * 10 * * 13.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Kirkcudbright, York.
Estimate of provinces 10. Estimate of counties 25.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 52—48.

Native. Ericetal (parasitic). The localities reported for C. Epithymum, as growing on clover, are omitted above; while Dr. Burgess's locality (Lightfoot's Flo. Scot.) for so-called " C. europæa," on " furze bushes, near Mollance, in Galloway," is considered to belong to the present species.

735. Cuscuta Trifolii, *Bab.*

Area * 2 3 4 5 * * * * 10 11.

South limit in Isle of Wight, Kent.

North limit in Durham.

Estimate of provinces 10. Estimate of counties 30.

Latitude 50—55. English (?) type of distribution.

Agrarian region. Inferagrarian—Midagrarian zones.

Descends to the coast level, in Channel province.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 51—48.

Colonist? Agrestal (parasitic). Hither may be referred all the species of Cuscuta, reported as growing on clover. Whether it is truly a British species, or one only introduced from time to time with the seeds of clover, I feel quite unprepared to say at present.

Cuscuta approximata, *Bab.*

Alien or Incognit. This ought not to have been introduced into lists of British Plants at all (Phytol. 1846, p. ix.), since it has been seen in England only upon cultivated plants of Melilotus officinalis (?) raised from imported seeds. (See Annals of Natural History, No. 102; Phytol. ii. 481.)

736. HYOSCYAMUS NIGER, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Ross, Banff, Aberdeen, Argyle.
Estimate of provinces 17. Estimate of counties 70.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.
Native. Viatical. As with various other plants which fail to reach the northern coast of Scotland, the more northerly habitats of the present species are of suspected origin; and taken together, the Scottish localities are sufficiently few and far between, to give something of the English character to the distribution of the species.

HYOSCYAMUS ALBUS, *Linn.*

Area [11].
Incognit? "H. albus is admitted by Withering into his Arrangement, in consequence of specimens having been gathered on the Sunderland ballast-hills, by Mr. E. Robson; upon similar grounds H. aureus, and fifty other exotics, might have been inserted in this Catalogue." (Winch, in Flo. N. D.) I presume it has become extinct since the time of Robson?

737. SOLANUM NIGRUM, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * (13 14 15).
South limit in Cornwall, Isle of Wight, Kent.
North limit in Durham, Lancaster, (Fife.)
Estimate of provinces 11. Estimate of counties 40.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—48.

Native. Viatical. Distrusted in its few Scottish localities, and consequently the nos. which indicate the provinces of Scotland are enclosed in the line devoted to the area of this species. The Edinburgh Society's Catalogue includes it with the doubtfully native plants of the Forth district. Dr. Johnston considers it introduced at Berwick-on-Tweed. And in reporting a locality in Wigtonshire, Professor R. Graham wrote, "This is a scarce plant in Scotland, and it may be doubted whether it is ever met with there, except when it has been introduced." Still, it is by no means a very unlikely plant to be truly indigenous in the West Lowland province.

738. SOLANUM DULCAMARA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Ross, Aberdeen, Argyle.
Estimate of provinces 17. Estimate of counties 75.
Latitude 52—58. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.
Native. Septal, Paludal. Infrequent in Scotland; though not so infrequent as to warrant its removal from the British to the English type.

739. ATROPA BELLADONNA, *Linn.*

Area 1 2 3 4 5 6 7 8 * 10 11 12 (13 14 15 16).
South limit in Dorset, Hants, Sussex, Kent.
North limit in Westmoreland, York;—(or Fife, Argyle).
Estimate of provinces 10. Estimate of counties 20.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 50—47.
Denizen. Viatical. Admitted a native by Hooker, Henslow, Babington, &c. Various botanists, however, record its local habitats as liable to suspicions; and some deem it a plant originally introduced by monks. On the whole, the testimony seems in favour of holding it a true native, on the chalk and limestone tracts, even although many of its present localities, about old castles and ruins of religious buildings, may have been of artificial origin in ages past.

DATURA STRAMONIUM, *Linn.*

Area (1 2 3 4 5 6 7 8 9 10 11 12 * * 15).
Alien. Occasionally found in various and widely distant

places, without being very persistent in any of them. It seems to be naturally a plant of warmer climates than our own.

† PHYSALIS ALKEKENGI, *Willd.*

Area (5).

Alien. "Naturalized on waste ground at Foleshill," Warwickshire. (Thomas Kirk, in Phytol. ii., 971.)

† LYCIUM BARBARUM, *Linn.*

Area (2).

Alien. "There is a hedge of Lycium barbarum on the shore near Lymington, far from any house, and I know not how the student would be able to pronounce that it was not wild." (Mr. Joseph Woods, in Phytol. iii. 261.) Hedges being artificial formations, it would seem to be a very easy and direct inference, to pronounce the shrub which constitutes the hedge, "not wild," unless found elsewhere also.

740. VERBASCUM THAPSUS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Forfar, Argyle (Arran).
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Viatical, Septal. Found northward as far as Aberdeen and Moray; but Dr. Murray and the Rev. G. Gordon, who record it there, alike pronounce it introduced. Professor Balfour found it in the Isle of Arran, and Mr. Gardiner includes it in the Flora of Forfarshire, as if native in that county.

VERBASCUM THAPSIFORME, *Schrad.*
VERBASCUM THAPSOIDES, *Huds.*

Area (3).

Incognit. In Kent, according to Hudson and Lindley. I do not clearly understand what these authors intend under the above names. The variety of V. Lychnitis, V. thapsoides of Hudson, "has frequently been produced in my garden by the farina of V. Thapsus falling upon the stigma of V. Lychnitis." (Mr. Griffith, in B. G. vol. i. p. 169.)

741. VERBASCUM LYCHNITIS, *Linn.*

Area 1 2 3 (4) 5 * 7 [8] * * * * * * (15 16).
South limit in Cornwall, Devon, Sussex, Kent.
North limit in Denbigh, Stafford;—or Stirling, &c.
Estimate of provinces 5. Estimate of counties 8.
Latitude 50—54 (57). English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—48 (47).
Native. Viatical. Recorded for 20 counties; but I fear that in several of them the species either was mistaken, or

had been introduced. In Cornwall (Hook. B. F.), Devon, (B. G. and Flo. Dev.), Somerset (B. G. and Flo. Bath.), Sussex (B. G.), Kent (Mr. Dennes, &c.) Surrey (Mr. Pamplin, &c.), Herts (Flo. Hertf.), Suffolk (B. G.), Norfolk (Mr. S. P. Woodward, &c.), Cambridge (Mr. Lyons, Flo. Cant.), Gloucester (Mr. C. T. Cooke, in B. G. C.), Worcester (Mr. E. Lees), Stafford (H. C. Watson), Salop (Mr. H. Spare, in Flo. Shrops.), Denbigh (Mr. J. E. Bowman), Notts (B. G.), Chester? (B. G.), Stirling (H. C. Watson), Perth (Maughan, in Hook. Scot.), Dumbarton (Flo. Glott.).

742. VERBASCUM FLOCCOSUM, *W. & K.*

Area * [2 3] 4 * * * [8 * 10 * * * * 15].
South limit in Suffolk.
North limit in Norfolk.
Estimate of provinces 1. Estimate of counties 2.
Latitude 52—53. Germanic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Ouse province.
Ascends to 50 yards, more or less, in same.
Range of mean annual temperature 49—48.

Native. Viatical. To the two counties named above, possibly those of Surrey and Hants should be added; the former, on the authority of Mr. J. Woods, in Bot. Guide; the latter, on that of Mr. W. Pamplin, in New Bot. Guide. Three other counties and provinces rest on authority which seems to require confirmation; namely, the counties of Nottingham (Ray, B. G.), York (Mr. Larrett Langley), and Banff (Mr. R. Maughan, in Hook. Flo. Scot.).

743. VERBASCUM NIGRUM, *Linn.*

Area 1 2 3 4 5 6 * 8 * * (11 * * 14).
South limit in Cornwall, Isle of Wight, Kent.
North limit in Norfolk, Notts, Derby, Salop.
Estimate of provinces 7. Estimate of counties 30.
Latitude 50—54 (56). English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends 100 or 200 yards, in England.
Range of mean annual temperature 52—48.

Native. Viatical. Possibly indigenous in the East-Lowland province, in the counties of Haddington and Edinburgh, one or both. In the Flora of Berwick, it is said to have been observed on waste ground at Ord, for many years, though probably an outcast of the garden. Winch mentions the ballast-hills of Tyne and Wear, in the province of Tyne. The wide space intervening between Haddington and Notts, with only the above mentioned very suspicious localities between those two counties, must weigh a good deal against regarding those of Haddington and Edinburgh as really natural habitats. The species is, however, entered as a native of their district in the Catalogue published by the Botanical Society of Edinburgh.

744. VERBASCUM BLATTARIA, *Linn.*

Area 1 2 3 4 5 6 * * 9 10 * 12.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Cumberland, North Lancashire, York.
Estimate of provinces 9. Estimate of counties 20.

Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Denizen. Viatical, Agrestal. Allowed to pass muster with the true natives by Hooker, Henslow, and Babington. I have never seen it in a locality which I could regard without considerable distrust; and several of those that are reported in books, now rest on old and unconfirmed, or doubtful authority.

745. VERBASCUM VIRGATUM, *With.*

Area 1 * (3 4) 5 6 7 8.
South limit in Cornwall, Devon, Somerset, Glamorgan.
North limit in Denbigh, Salop, Stafford, Lincoln.
Estimate of provinces 5. Estimate of counties 8.
Latitude 50—54. Atlantic (?) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to 100 yards, more or less, in England.
Range of mean annual temperature 52—48.

Denizen. Viatical, Agrestal. A dubious native, like V. Blattaria, but equally admitted to be indigenous by Hooker, Henslow, and Babington. It is far from improbable that some of the habitats of the present species have been recorded for the V. Blattaria. I saw a very few plants of it in a field of mown clover, in the parish of Wombourne, Staffordshire, in 1847; but could not decide whether and how it had been introduced to the field. I have seen specimens from Devon (Rev. G. W. Sandys), and Denbigh (Mr. J. E. Bowman). The other counties mentioned for

the species, are, Cornwall (Mr. G. Oman), Surrey (Rev. S. Palmer), Herts (Flo. Hertf.), Norfolk (Nat. Hist. Yar.), Worcester (Rev. W. F. Rufford, &c.), Salop (Flo. Shrops.), Hereford (B. G.), Glamorgan (Rev. J. C. Collins), Lincoln (Hook. Brit. Flo. 5.)

VERBASCUM PHŒNICEUM, *Linn.*

Area (7).

Alien or Incognit. "In a scattered fence, on the right hand from Beaumaris to the Almshouses, in 1803. In the following year, it nearly covered acres of ground in the adjoining field. I have never seen it in a garden in the neighbourhood." (Welsh Botanology, p. 23.)

VERBASCUM PHLOMOIDES, *Linn.*

Area — ?

Incognit? Introduced among the species that have been reported as British, at the end of the London Catalogue, second edition; but my note of the authority is unfortunately lost or mislaid, and I do not recollect by whom it was so reported, or in what publication.

"VERBASCUM FERRUGINEUM."

Area — ?

Incognit? This name is given in Henslow's Catalogue of British Plants, 1835, as that of a native species. I have no other information respecting it.

746. VERONICA SPICATA, *Linn.*
746, b. VERONICA HYBRIDA, *Linn.*

Area 1 * [3] 4 5 [6] 7 * * * * 12 * * * * * [18].
South limit in Suffolk, Somerset or Gloucester.
North limit in N. Lancash. Westmoreland, Cumberland?
Estimate of provinces 4. Estimate of counties 8.
Latitude 51—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, or nearly so.
Ascends to 250 yards, in North Wales.
Range of mean annual temperature 49—47.

Native. Rupestral, &c. On the eastern side of England, V. spicata has been reported to occur in Essex (Rev. S. Palmer), which was probably an error; also in Suffolk, whence I have specimens from Miss Bell; and about Newmarket Heath, on the border of Cambridge, where it is said to be now extinct. On the western side of England, it is usually or always found in the larger form of V. hybrida; occurring on St. Vincent's Rocks, near Bristol, a habitat which causes it to be referred to two counties, Somerset and Gloucester, in provinces 1 and 5; also in three or four counties of North Wales; and in North Lancashire and Westmoreland, in the Lake province. The counties of Cornwall (With. — B.G.), Glamorgan (Swansea Guide—Dilwyn), and Cumberland (Hutchinson — B. G.), have likewise been reported, but require verification. Mr. J. E. Bowman gives it an elevation of 700 or 800 feet on Craig Breiddin, in Montgomeryshire, which may likely warrant the assignment of it to the superagrarian zone, and to a mean annual temperature of 46. V. officinalis was doubtless mistaken for V. spicata in Orkney; as it has also been so mistaken several times elsewhere.

747. VERONICA ARVENSIS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 yards, in East Highlands.
Range of mean annual temperature 52—43.
Native. Glareal, Agrestal. Common all over Britain, in the low grounds.

748. VERONICA VERNA, *Linn.*

Area * * [3] 4 * * [7].
South limit in Suffolk.
North limit in Norfolk.
Estimate of provinces 1. Estimate of counties 2.
Latitude 52—53. Local (Germ.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends nearly to the coast level, in Ouse.
Ascends to 50 yards, more or less, in same province.
Range of mean annual temperature 49 or 48.
Native. Glareal. Very local; occurring in some few spots in the two counties above mentioned. The name is included in Cooper's list of Metropolitan species, in the Flora Metropolitana; also in the list of plants in the Faunula Grustensis. I presume an error respecting the name or species in each of these cases.

749. VERONICA TRIPHYLLOS, *Linn.*

Area * * [3] 4 [5] * * * * 10.
South limit in Suffolk and Norfolk.
North limit in York.
Estimate of provinces 2. Estimate of counties 3.
Latitude 52—54. Local (Germ.) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, or nearly so, in Ouse.
Ascends to 50 yards, more or less, in England.
Range of mean annual temperature 49—48.

Native. Glareal, Agrestal. Local, though rather less so than V. verna. Like the latter, it occurs in some few localities in Suffolk and Norfolk; also, about York and Doncaster. Its extension into a second province, still eastern, takes it one step farther from the strictly Local towards the Germanic type of distribution. Enumerated in Cooper's list of Metropolitan plants, and in Purton's Midland Flora;—erroneously in both instances, I fear. Possibly the temperature might have been indicated to range downwards to 47, considering the inland position of the Yorkshire habitat.

750. VERONICA SERPYLLIFOLIA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.

Descends to the coast level, in the Peninsula.
Ascends to 700 yards, in East Highlands.
Range of mean annual temperature 52—40.
Native. Agrestal, Pascual, &c. A common plant throughout Britain. The range of altitude, &c. must be varied according to the exclusion or inclusion of the V. humifusa as a form of the present species.

750, b. VERONICA HUMIFUSA, *Dicks.*

Area * * * * * * 7 * * * 11 * * * 15 16 17.
South limit in Caernarvon, Denbigh ?
North limit in Sutherland.
Estimate of provinces 5. Estimate of counties 15.
Latitude 53—59. Highland type of distribution.
Arctic region. Inferarctic—Superarctic zones.
Descends to 800 yards, or lower, in East Highlands.
Ascends to 1250 yards, in same province.
Range of mean annual temperature 37—33.
Native. Uliginal. Most authors holding this to be only a mountain form or variety of V. serpyllifolia, its name is omitted from many local lists of species, which may cause it to appear less frequent, and less general to the mountainous counties, than the facts might warrant if they were more fully ascertained. I have collected it in the counties of Perth, Forfar, Aberdeen, Moray, and West-Inverness; and may probably enough have seen it in other counties also. Besides these, my compiled notes include Caernarvon, Denbigh, Northumberland and Sutherland. The late Mr. J. E. Bowman is my authority for Denbighshire; and he gives the altitude of 1500 feet, which is lower than I have made any note of seeing it, even in the Highlands. The variety, if such it be, is persistent in a garden, during

many successive years; but the seeds have not vegetated with me.

751. VERONICA ALPINA, *Linn.*

Area * * * * * * * * * * * * * * * 15 16.
South limit in Stirling, Perth, Forfar.
North limit in Moray, Aberdeen, West-Inverness.
Estimate of provinces 2. Estimate of counties 6.
Latitude 56—58. Highland type of distribution.
Arctic region. Midarctic—Superarctic zones.
Descends to 700 yards, in East Highlands.
Ascends to 1200 yards, in West Highlands.
Range of mean annual temperature 39—34.

Native. Uliginal. Perhaps one or two others might have been added to the estimate of six counties, the number in which this species has been already ascertained. Those of Argyle, Banff, Ross or Sutherland, would seem not unlikely. With the progress made in re-converting the sheep-walks into deer-forests, in the Highland counties, this species may become more frequent; for it does not seem to be naturally restricted to rocky places and precipices, but rather to be adapted to the stream-sides and swampy spots on the declivities of the mountains, where, at present, it is destroyed by sheep.

752. VERONICA SAXATILIS, *Linn.*

Area * * * * * * * * * * * * * * * * 15 16 [17].
South limit in Argyle? Perth, Forfar.
North limit in Sutherland? West-Inverness?
Estimate of provinces 2. Estimate of counties 4.

Latitude 56—59. Highland type of distribution.
Arctic region. Midarctic zone.
Descends to 750 yards, in East Highlands.
Ascends to 900 yards, in same province.
Range of mean annual temperature 39—37.

Native. Rupestral. The five counties above named are all which are supposed to produce this species; and although none of them can be considered improbable, the records are liable to distrust from uncertainty. The plant is well known to occur in different places in Perth and Forfar, and I have collected specimens in both these counties. Argyle and West-Inverness were published for "V. fruticulosa;" but in all likelihood it was the discovery of the present species which led to the reports of V. fruticulosa growing in those two western counties. I am not aware on what personal authority V. saxatilis is reported in Anderson's Guide as found on Ben More, in Assynt, Sutherland; but that habitat would seem not at all improbable in itself.

VERONICA FRUTICULOSA, *Linn.*

Area (14) [15 16].

Incognit; Alien. Mr. R. Brown was supposed to have collected this species on Ben Lawers, in Perthshire, where only the very similar V. saxatilis can now be found. The Rev. Dr. Walker was confidently reported to have discovered it on Ben Cruachan, in Argyleshire, and to have thence introduced the species into his own garden. Nevertheless, I must deem that the true V. fruticulosa never was collected on the Highland mountains. Mr. H. M. Balfour informs me that it has become established on a wall near Edinburgh.

753. VERONICA SCUTELLATA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Sutherland.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—60. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 500 yards, in East Highlands.
Range of mean annual temperature 52—41.

Native. Uliginal. Nearly or quite general through the counties of the mainland; but not enumerated in the lists for Shetland and the Outer Hebrides. Probably rare above the agrarian region; but its occurrence at upwards of 1500 feet in the Pass of Drumochter, scarcely 150 feet below the commencement of Sibbaldia procumbens, must assign it to the arctic region; although in some few more open places the agrarian region has been considered to attain, and even to exceed, 1500 feet.

754. VERONICA ANAGALLIS, *Linn.*

Area general?
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 81.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—45.

Native. Paludal, Inundatal. I am unprepared to adduce any authority for the existence of this species in the Lake province; and as it may possibly be quite absent from the Isle of Man, if not from any other county, the estimate is taken at 81 instead of 82. Only one locality is mentioned for it in the Flora of Shetland.

755. VERONICA BECCABUNGA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 900 yards, in East Highlands.
Range of mean annual temperature 52—37.

Native. Paludal. Very common through the agrarian region; infrequent or rare in the arctic region. I have only one note of seeing it above 700 yards; namely, near the crest of the pass from Glen Dole to Glen Callater.

756. VERONICA OFFICINALIS, *Linn.*
756, c. VERONICA HIRSUTA, *Hopk.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.

Descends to the coast level, in the Peninsula.

Ascends to 900 yards, in East Highlands.

Range of mean annual temperature 52—38.

Native. Ericetal, Sylvestral, &c. Like several other plants of the heaths and moors, this rather affects hedge-banks and coppices in the South-east of England; becoming also less frequent in that part of England than it is elsewhere.

757. VERONICA MONTANA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Moray, Banff, Dumbarton.

Estimate of provinces 16. Estimate of counties 70.

Latitude 50—58. British (?) type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 51—47.

Native. Sylvestral. Rather too widely distributed to be strictly an example of the English type, and yet almost too little frequent in Scotland to warrant its assignment to the British or general type. Possibly the comital estimate of 70 may be rather over the truth, while that of 60 might be as much below. My notes already show authorities for its existence in upwards of fifty counties, and several others appear very likely to produce it.

758. VERONICA CHAMÆDRYS, *Linn.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Orkney, Sutherland.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 900 yards, in East Highlands.
Range of mean annual temperature 52—38.

Native. Septal, &c. This very general, and, when in flower, conspicuous species, was not observed in the Outer Hebrides by Babington and Balfour; but it has still appeared proper to include those Isles in the comital estimate for a species so very common almost throughout Britain. There is, however, some geographic countenance given to any idea of its entire absence from the Hebridean group, by the circumstance of only two localities being known in Shetland, and apparently none in Faroe. Rare above 2000 feet.

759. VERONICA HEDERIFOLIA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, —— ?
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—45.

Native. Agrestal, Sylvestral. Not observed in the Outer Hebrides by Balfour and Babington; nor in Sutherland or Caithness by myself. Said to be common in Shetland, and very common in Moray; so that there would

seem to be a fair presumption of its comital generality. This appears more frequently than most other agrestal weeds on newly-disturbed ground in woods and coppices; chiefly, perhaps, where the soil is sandy.

760. VERONICA AGRESTIS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Hebrides, Caithness.
Estimate of provinces 18. Estimate of counties 81.
Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 yards, in East Highlands.
Range of mean annual temperature 52—46.
Native. Agrestal. Not extending to Shetland, according to Edmondston's Flora.

761. VERONICA POLITA, *Fries.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 16.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Argyle, Forfar, —— ?
Estimate of provinces 16. Estimate of counties 70.
Latitude 50—57. British (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.
Native. Agrestal. This species was long deemed to be a variety of V. agrestis, and consequently the distribution

of each is still somewhat uncertain, when they are taken separately. V. polita seems not unlikely to occur farther northward than the two counties above named; but if not found beyond Forfarshire, its geographic type may be deemed as near to the English as to the British.

762. VERONICA BUXBAUMII, *Ten.*

Area (1 2 3 4 5 6 * 8 * 10 11 * 13 14 15).

Alien. Apparently introduced, and artificially distributed by the sowing of clover seeds or by other means. It now occurs in numerous counties, from Cornwall and Kent northward to Fife,—even to Moray, through being sown as a garden annual.

763. BARTSIA ALPINA, *Linn.*

Area * * [3] * * * * * * 10 11 [12] * * 15 [16 17].
South limit in York, Durham, Westmoreland?
North limit in Perth, Ross? Inverness?
Estimate of provinces 3. Estimate of counties 3.
Latitude 54—57 (58). Highland type of distribution.
Arctic region. Inferarctic—Midarctic zone.
Descends to ——? (600 yards, more or less?)
Ascends to ——? (1000 yards, more or less?)
Range of mean annual temperature (say 48—38).

Native. Rupestral. Not having seen this local plant in its wild habitats, I am unable to illustrate its distribution sufficiently from the inexact and uncertain data afforded by other botanists. It has been recorded from the six counties above mentioned, together with the extremely improbable addition of Essex; the latter resting only on the

authority of the Rev. S. Palmer, a contributor of errors to the Magazine of Natural History. I have seen specimens from York (Mr. John Tatham), Durham (Sir W. C. Trevelyan), and Perth (Mr. William Gourlie, B. S. London); and these appear to be the only counties which can be relied upon at present; although it cannot be said that the three other counties, interrogatively named above, are in themselves improbable habitats. The county of Westmoreland rests on the authority of Ray's Synopsis, repeated by various subsequent authors, but apparently without confirmation afresh. That of Inverness is mentioned in the New Botanist's Guide, on the dubious authority of Boué; and that of Ross, in the same work, on the authority of a checked catalogue, from the Rev. G. Gordon, without special explanation.

764. BARTSIA VISCOSA, *Linn.*

Area 1 2 * * * 6 * * 9 * * * 13 * * 16.
South limit in Cornwall, Dorset, Hants, Sussex.
North limit in Argyle, Dumbarton, Renfrew.
Estimate of provinces 6. Estimate of counties 12.
Latitude 50—57. Atlantic type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 50 or 100 yards, in England.
Range of mean annual temperature 52—47.

Native. Paludal. To the seven counties named above, those of Devon, Glamorgan, Chester, Lancaster, and Wigton may be added on admissable authority. Some others of the western counties would seem likely habitats, and perhaps the proper comital estimate may eventually be found nearer 15 than 12.

765. EUPHRASIA OFFICINALIS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides,
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Superarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 1200 yards, in West Highlands.
Range of mean annual temperature 52—35.
Native. Ericetal, Pascual. Very general in its distribution, whether tried by provinces, counties, zones, altitude or latitude. And if only a single species, certainly one of the most variable.

766. EUPHRASIA ODONTITES, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Hebrides, Sutherland.
Estimate of provinces 18. Estimate of counties 81.
Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 400 yards, in East Highlands.
Range of mean annual temperature 52—42.
Native. Pascual, Agrestal, &c. Absent from the Flora of Shetland.

767. RHINANTHUS CRISTA-GALLI, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 850 yards, in East Highlands.
Range of mean annual temperature 52—38.
Native. Pratal, Ericetal. A very general plant, although it may be that some of the habitats indicated for this species, do really belong to the alleged other species, R. major.

767, b. RHINANTHUS MAJOR, *Ehrh.*

Area * 2 * * 5 * * 8 * 10 11 * * 14 15 * * 18.
South limit in Sussex, —— ?
North limit in Shetland, —— ?
Estimate of provinces 12. Estimate of counties 50.
Latitude 50—61. British (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, or nearly so, in Channel.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 50—45.
Native. Agrestal, Ericetal. Only of late well distinguished from R. Crista-galli by British botanists, and probably still often passed by for that said-to-be distinct species. At present, I am aware of recorded localities

only in the following counties; namely, Sussex (Mr. Borrer), Gloucester (Mr. Buckman), Stafford (Dr. Garner), Notts (Flo. Nott.), York (Mr. J. Ward), Durham (Mr. R. B. Bowman), Northumberland (Dr. Richardson, &c.), Berwick (Flo. Berw.), Forfar (Dr. G. Macnab, &c.), Moray (Mr. Stables, &c.), Shetland (Flo. Shet.). Looking to this dispersed distribution in an area extending from the south coast to Shetland, the probability of the species occurring in many other counties seems to warrant and even to require a much higher estimated census, both for provinces and counties, than the actual number ascertained.

768. MELAMPYRUM CRISTATUM, *Linn.*

Area * 2 3 4 [5 * * * * 10].
South limit in Hants, Essex:
North limit in Norfolk, Cambridge, Northampton.
Estimate of provinces 3. Estimate of counties 11.
Latitude 50—53. Germanic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Channel.
Ascends to 50 or 100 yards, in England.
Range of mean annual temperature 50—48.

Native. Sylvestral, Agrestal. In addition to the five counties above mentioned, the present species has been stated to occur in Bucks, Herts, Suffolk, Bedford, Huntingdon, Worcester (Midl. Flo.), Salop (Midl. Flo.), and York (Ray); the three last being very doubtful. Possibly Dorset might be added, as the species is reported to occur beyond 16, but within 30, miles from Poole.

769. MELAMPYRUM ARVENSE, *Linn.*

Area * 2 3 4 [5 * * * 9].
South limit in Isle of Wight.
North limit in Norfolk.
Estimate of provinces 3. Estimate of counties 3.
Latitude 50—53. Local (Germ.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Channel.
Ascends to 50 or 100 yards, in England.
Range of mean annual temperature 51—48.
Native? Agrestal. Certainly found in different localities in the two counties above mentioned, and also very locally in Hertfordshire. Has likewise been reported in Dorset, Gloucester, Warwick, and Chester; all of which will require confirmation, although not improbable in themselves, excepting the county of Chester.

770. MELAMPYRUM PRATENSE, *Linn.*
770, b. MELAMPYRUM MONTANUM, *Johnst.*

Area general.
South limit in Devon, Isle of Wight, Kent.
North limit in Orkney, Hebrides, Sutherland.
Estimate of provinces 18. Estimate of counties 81.
Latitude 50—60. British type of distribution.
A.A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 1000 yards, in East Highlands.
Range of mean annual temperature 51—36.
Native. Sylvestral, Ericetal. Absent from the Shetland

Isles, according to Edmondston's Flora. Nor have I any authority for its occurrence in Cornwall; although we may fairly take that county into the estimated census, and consider the species general, with the single exception of Shetland, supported by its absence also from Faroe.

771. MELAMPYRUM SYLVATICUM, *Linn.*

Area [1 2 3 * 5 * 7 8 9] 10 11 12 13 14 15 * 17 [18].
South limit in York, Westmoreland? Cumberland?
North limit in Ross, Moray, Aberdeen, Ayr?
Estimate of provinces 7. Estimate of counties 15.
Latitude 54—58. Scottish type of distribution.
Agrarian region. Superagrarian zone.
Descends to 100 yards, more or less, in Scotland.
Ascends to 350 yards, in East Highlands.
Range of mean annual temperature 45—43.

Native. Sylvestral. It may be said almost confidently that in half the counties on record as producing this species, only M. pratense has been really found; the usual situation of the latter in woods and shaded spots, with much similarity of habit and character, leading to the frequent misapplications of name. The provinces of the Lakes (Mr. J. Woods, in B. G.), and West Lowlands (Mr. G. Lloyd, and Hook. Br. Flo.) may require verification; those of Humber, Tyne, East Lowlands, East Highlands, and North Highlands being probably correct. I have collected this species in Perth and Aberdeen, and have received specimens from Durham (Mr. R. B. Bowman) and Moray (Mr. W. Stables).

772. PEDICULARIS PALUSTRIS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 600 yards, in East Highlands.
Range of mean annual temperature 52—41.
Native. Paludal, Uliginal. Not ascending so high, nor occurring so frequently as P. sylvatica.

773. PEDICULARIS SYLVATICA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 650 yards, in East Highlands.
Range of mean annual temperature 52—40.
Native. Ericetal, Inundatal. May rather exceed the altitude indicated, but I have never seen it certainly up to 700 yards.

774. SCROPHULARIA NODOSA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney? Hebrides, Ross.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—58 (60). British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 150 yards, in East Lowlands.
Range of mean annual temperature 52—45.
Native. Sylvestral, Septal, Inundatal. Possibly 80 may be rather too high a comital estimate, while the next step in the descending series would likely be too low. The species is omitted from the Floras of Shetland and Orkney, and I did not observe it in Caithness, Sutherland, or Western Inverness; although it cannot be deemed very unlikely to occur in some or all of the three last-named counties; and it may be this present species which was intended under name of "S. aquatica" in Barry's History of Orkney.

774, b. SCROPHULARIA EHRHARTI, *Stev.*

Area * 2 3 * * * * * 9 10 * * * 14.
South limit in Sussex, —— ?
North limit in Linlithgow, —— ?
Estimate of provinces 10. Estimate of counties 25.
Latitude 50—56. English (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zone.
Descends to the coast level, or nearly so, in England.

Ascends to 150 yards, in province of Humber.

Range of mean annual temperature 50—47.

Native. Sylvestral, Paludal. Until very recently, this has been confused with S. aquatica, although it really appears to be much more akin to S. nodosa. Habitats are reported in Sussex, Middlesex, Lancaster, York, Berwick, and Edinburgh or Linlithgow; probably in both the two latter counties, as it is said to grow by a stream which forms their dividing or boundary line. I presume that it will be found in various others, in addition to these half-dozen distantly scattered counties. It is the S. aquatica of many Continental authors, but not of the Linnean herbarium.

775. SCROPHULARIA BALBISII, *Hornem.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 [15 * * 18].

South limit in Cornwall, Isle of Wight, Kent.

North limit in Renfrew? Berwick? [Edinburgh? Fife?]

Estimate of provinces 14. Estimate of counties 50.

Latitude 50—56. English type of distribution.

Agrarian region. Inferagrarian—Midagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 52—47.

Native. Paludal, Septal. All the Scottish counties on record for S. aquatica must be considered doubtful, that is, until specially verified by botanists who have clearly learned the differences between S. Balbisii and S. Ehrharti, both of which have passed under the name of S. aquatica. The most northerly county from which I have seen a specimen of S. Balbisii, is that of Northumberland, whence it was sent to me by Mr. John Storey, to whose exertions my herbarium has been very largely indebted.

776. SCROPHULARIA SCORODONIA, *Linn.*

Area 1 * [3].
South limit in Cornwall, Devon.
North limit in the same counties.
Estimate of provinces 1. Estimate of counties 2.
Latitude 50—51. Local (Atl.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to 50 yards, more or less, in England.
Range of mean annual temperature 52—51.
Native. Septal. Very local, as will be seen by the above formula. Its occurrence in Ireland and the Channel Isles, also, shows that it properly belongs to the South-western or Atlantic type. Erroneously mentioned in Gough's Camden, on the authority of the late Mr. E. Forster, as a native of Hertfordshire.

777. SCROPHULARIA VERNALIS, *Linn.*

Area * * 3 4 (5) * 7 * * 10 (* * 13 14 15).
South limit in Kent? Surrey, Berks, Salop?
North limit in York;—or Stirling? Perth? Aberdeen?
Estimate of provinces 4. Estimate of counties 6.
Latitude 51—54. English (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in Thames province.
Ascends to 50 or 100 yards, in England.
Range of mean annual temperature 49—48.
Denizen. Viatical. English authors admit this among our native plants; but various localities for it are recorded

in terms which either express or suggest considerable distrust. Besides the counties above mentioned, it is reported in Herts, Essex, Suffolk, Norfolk, Montgomery, Merioneth, Caernarvon, Dumfries, Ayr, Lanark, Edinburgh, Fife or Kinross, and Forfar. The authors of the Edinburgh Botanical Society's Catalogue question its nativity within thirty miles of Edinburgh city; and my own observations in that vicinity would concur with them, or reduce the doubt into conviction of the species not being indigenous there.

778. DIGITALIS PURPUREA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Hebrides, Sutherland.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—60. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 650 yards, in East Highlands.
Range of mean annual temperature 52—40.

Native. Septal, &c. Unknown in Cambridgeshire, and possibly also absent from one or two of the neighbouring counties, as Huntingdon and Northampton; but not absent from Suffolk and Norfolk, as was stated in English Flora. Edmondston omits it from his Flora of Shetland. There are some local peculiarities, apparently connected with the soil or subjacent rock, in the habitats of this plant. Thus, Mr. W. Cautrell stated that about Wirksworth, in Derbyshire, the Digitalis is abundant on the gritstone, but not seen on the limestone. (Mag. Nat. Hist. vii. 274.) And Mr. J. E. Bowman wrote me to the following effect:—"The Digitalis

grows more copiously on clayslate than on limestone; so much so, that on a hill at the entrance of the Vale of Llangollin, where these formations unite, their junction may be traced by its abundance on the former, and almost total absence on the limestone." On the contrary, Mr. C. Conway reports that, in Monmouthshire, this plant is abundant on the limestone. In my own neighbourhood, in Surrey, it prevails on sand, sandy peat, and even sandy clays; while it shuns the tracts where the London clay comes near the surface, with overlaying gravel or loam; but I am not clear that the undulated character of the surface in the former, as compared with the level and less shaded latter tracts, may not have its share of influence.

ANTIRRHINUM MAJUS, *Linn.*

Area 1 2 3 4 5 6 7 8 * 10 11 * 13 14 15 16.

Alien. This species has become so well established in some places in the Southern provinces, as to be deemed "undoubtedly wild;" but I must concur with the authors of our descriptive Floras and Catalogues of British plants, in holding it to be an introduced species.

780. ANTIRRHINUM ORONTIUM, *Linn.*

Area 1 2 3 4 5 6 7 * * 10 (11).
South limit in Cornwall, Isle of Wight, Kent.
North limit in York, Anglesea, Norfolk.
Estimate of provinces 8. Estimate of counties 30.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 52—48.

Native. Agrestal. Uncertain whether this should be placed in the class of natives or in that of colonists through agriculture. Apparently found in most counties of the seven southern provinces, and also in one or two places in Yorkshire; whether truly wild in the latter county I am not prepared to say, except that it is entered in the Flora of Yorkshire, as if so, on the authority of the Rev. W. Hinckes.

781. LINARIA CYMBALARIA, *Mill.*

Area (1 2 3 4 5 6 7 8 9 10 11 * 13 14 15).

Alien. Well established on old walls in numerous localities; but its restriction to such spots, and its sensibility to frost, sufficiently indicate its foreign origin.

782. LINARIA SPURIA, *Mill.*

Area 1 2 3 4 5 6 * 8 * (10 11).

South limit in Devon, Isle of Wight, Kent.

North limit in York? Notts, Norfolk, Warwick.

Estimate of provinces 7. Estimate of counties 30.

Latitude 50—54. Germanic (?) type of distribution.

Agrarian region. Inferagrarian zone.

Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 51—48.

Native. Agrestal. Uncertain whether this species should be assigned to the English or Germanic group; though, on the whole, its comparative infrequency in the western

counties, and its apparent absence from the most westerly, as those of Wales, with the exception of Glamorgan, give it much approximation to the Germanic type. In the province of Tyne, according to the Flora by Winch, it is only a plant of the ballast-hills. In that of Humber, the Rev. Archdeacon Pierson was stated (B. G.) to have found the species near Malton; but it is not admitted into Baines's Flora of Yorkshire. In that of Trent, some very few localities have been mentioned in Nottinghamshire. The chief prevalence of the species would seem to be in the provinces of Channel, Thames, and Ouse.

783. Linaria Elatine, *Linn.*

Area 1 2 3 4 5 6 7 8 (9) 10 (11).
South limit in Cornwall, Isle of Wight, Kent.
North limit in York, Anglesea, Norfolk.
Estimate of provinces 9. Estimate of counties 40.
Latitude 50—54. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—48.

Native. Agrestal. With nearly the same distribution as L. spuria otherwise, this extends so much more generally into the western counties, as to come clearly within the idea of the English or the southern type. Perhaps the estimate of 40 counties may overshoot the truth, but it is likely that 30 might be as much below. As it occurs only on ballast-hills in the province of Tyne, its northern limit is here placed in Yorkshire.

LINARIA PURPUREA, *Linn.*

Area (* 2 3 * * 6 * * * * * 11 * * 14 15).

Alien. Has been recorded in Sussex, Kent, Surrey, Glamorgan, Durham, and Edinburgh, as occasionally found on old walls, &c. To this present species also may perhaps belong the habitat near Aberdeen, which has been indicated for L. repens.

784. LINARIA REPENS, *Ait.*
784, b. LINARIA BAUHINII, *Aut. Ang.*
784, c. LINARIA SEPIUM, *Allm.*

Area 1 2 3 4 5 6 * 8 * * (11) 12 13 14 (15).
South limit in Cornwall, Isle of Wight, Sussex, Kent?
North limit in Ayr? Westmoreland, Derby? Bedford.
Estimate of provinces 9. Estimate of counties 20.
Latitude 50—56. Atlantic type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—48.

Native. Septal, Rupestral. In several places in the provinces of the Peninsula, Channel, and South Wales; very local in those of Thames and Ouse; with some few outlying localities to the northward, mostly to be distrusted. Near Inverness, Aberdeen, and Edinburgh; but introduced to those places, if not erroneously reported. On the ballast-hills only, and thus not to be pronounced a native, in the province of Tyne. Near Hill-top, in the neighbourhood of Breadsall, Derbyshire, according to Mr. J. Whitta-

ker, in Phytologist, ii. 903; which may require verification, lest any mistake in the species should have occurred. On rocks facing the sea, near Culzean, Ayreshire, according to Mr. Shankey, in Hooker's Flora Scotica. About Coniston Water, in the Lake province, according to Mr. Borrer, in Phytologist, ii. 426; but apparently it is one of the varieties which occurs there; or, possibly, some other species which had escaped from "gardens at Stavely and Ambleside." With regard to the two varieties or subspecies "Bauhinii" and "sepium," I doubt much whether they have been correctly referred to L. italica, and feel much more disposed to view them as either hybrid or simply aberrant forms of L. repens and L. vulgaris. If not hybrid, I think that the Cornish form, from the neighbourhood of Penrhyn, belongs rather to L. vulgaris than to L. repens; while the others which I have seen, from Hants and Ireland, look nearer to the latter.

785. Linaria vulgaris, *Mill.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Aberdeen, Dumbarton.
Estimate of provinces 16. Estimate of counties 70.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.
Native. Septal, Glareal. As I never met with this species in my Scottish ramblings northward of the Friths of Forth and Clyde, I should suppose it to be a scarce plant in the Highland provinces. In the Floras of Forfar and

Moray, however, it is mentioned as frequent; and as rather local, in the intermediate Flora of Aberdeen. Perhaps another province might have been reckoned in the estimated census; for a species which is frequent in Moray, seems likely not to be wholly absent from Ross-shire.

786. LINARIA PELISSERIANA, *Mill.*

Sarnian. So far as known, this is quite limited to Jersey, among the British Isles.

LINARIA SPARTEA, *Hoffmsg.* (?)

Area (3).

Alien. Occurred during some few successive years on sandy ground enclosed for cultivation from Walton Heath, close by the Walton Station of the South-western Railway; the quantity depending much on the kind of crops. I never saw it under favorable circumstances for satisfactorily making out the species; it might possibly be L. juncea or L. Loeselii.

LINARIA SUPINA, *Desf.*

Area (1 * 11).

Alien. Found near Plymouth, Devon, by the Rev. C. A. Johns, Rev. W. T. Hore, &c.; and near Poole, Dorset, by Mr. Borrer; supposed to have been introduced to both those places with ballast from Rouen. Subsequently, it has been found in two localities in Cornwall; namely, on the sides of the embankment at Hayle, by Mr. Thomas

Westcombe, and at St. Blazey's Bay, by Mr. George Mawe. Mr. John Storey favored me with a specimen found on ballast near Newcastle, in the Tyne province. The Cornish localities will suggest the question, whether the species may not be indigenous to our southern coasts? If not indigenous, it seems not unlikely to become established there.

787. LINARIA MINOR, *Desf.*

Area 1 2 3 4 5 6 7 8 * 10 11 * 13 14 (15).
South limit in Cornwall, Isle of Wight, Kent.
North limit in Lanark, Berwick, (Kinross).
Estimate of provinces 12. Estimate of counties 40.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.
Native. Agrestal, Glareal. In every county of the first five provinces, unless that of Worcester be an exception. Westward and northward, it becomes comparatively rare; and in Scotland, it is very local. Said to be naturalized on gravel walks at Kinross, in the East Highland province.

788. LIMOSELLA AQUATICA, *Linn.*

Area 1 2 3 4 5 * 7 8 9 10 11 * * 14 15.
South limit in Somerset, Wilts, Sussex, Surrey.
North limit in Forfar? Haddington, Durham, Lancaster.
Estimate of provinces 13. Estimate of counties 30.
Latitude 50—57. English type of distribution.

Agrarian region. Inferagrarian—Midagrarian zones.

Descends to the coast level, in Thames (and Channel?).

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 50—47.

Native. Inundatal. According to the localities hitherto placed on record, this little plant would seem to be very thinly scattered through England, and extremely local in Scotland. But its inconspicuous appearance, and the uncertainty of its localities, which are so much affected by differences of season in relation to humidity, no doubt cause it to be frequently overlooked by botanical collectors. Only two habitats in Scotland are known to me by report; namely, one by a pool near Guillon Links, Haddingtonshire, whence I have a specimen from Dr. G. Macnab; also, in Gardiner's Flora of Forfarshire, it is stated to be "common," on the authority of Mr. Croall, who alone appears to have seen it in that county, and who specifies no locality in particular.

789. SIBTHORPIA EUROPÆA, *Linn.*

Area 1 2 * * * 6 * [8 * * * 12].

South limit in Cornwall, Devon, Sussex.

North limit in Somerset, Glamorgan.

Estimate of provinces 3. Estimate of counties 6.

Latitude 50—52. Atlantic type of distribution.

Agrarian region. Inferagrarian zone.

Descends to the coast level, in the Peninsula.

Ascends to 50 or 100 yards, in the same province.

Range of mean annual temperature 52—49.

Native. Septal, Uliginal. A local plant, not known in more than the five counties above mentioned; and that of Glamorgan resting on old and unconfirmed authority,

quoted in Turner and Dillwyn's Botanist's Guide. In the same publication we find authorities cited for the Sibthorpia in Lincoln, Westmoreland, and Cumberland; but I suspect that Chrysosplenium oppositifolium had been mistaken for it there.

MIMULUS LUTEUS, *Linn.*

Area (* * 3 * 5 6 * * * 10 11 12 13 14 15 16).

Alien. An American plant which is fast naturalizing itself in this country, and more especially in Scotland, by small streams and on wet banks. It has been recorded as already established, more or less perfectly, in Surrey, Herts, Monmouth, South Wales, York, Northumberland, Westmoreland, Dumfries, Lanark, Stirling, Perth, Forfar, Aberdeen, and the Isle of Skye. In 1841, I traced it for the space of half a mile along the side of the Tay, below Perth, looking quite as well established in several spots in this line, as was the Pedicularis palustris and other genuine Britons; and it was also flourishing by a small rill, near the Inn of Dalnacardoch, in the same county, a thousand feet above the sea. It makes less progress towards naturalization in the south-east of England, where the streamlets become dry in summer.

790. OROBANCHE MAJOR, *Linn.* (?)

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 * [15 16].
South limit in Devon, Isle of Wight, Kent.
North limit in Dumfries, Northumberland.
Estimate of provinces 13. Estimate of counties 40.
Latitude 50—56. English type of distribution.

Agrarian region. Inferagrarian—Midagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 51—47.

Native. Sylvestral, Ericetal. Parasitical upon Ulex, Spartium, &c. Much confusion prevails among the published localities for our various species of Orobanche, which renders the indication of their geographical relations highly uncertain and unsatisfactory. The East and West Highland provinces are excluded from the true area, under the presumption that the habitats published for "O. major," on the coasts of those provinces, really belonged to O. rubra. Babington has adopted the name of "O. rapum (Thuill.)" for this species, and cites Fries as his authority for O. major (Linn.) and O. elatior (Sutt.) being synonymous.

791. OROBANCHE CARYOPHYLLACEA, *Sm.*

Area [1] * 3.

South limit in Kent or Devon?

North limit in Kent or Surrey?

Estimate of provinces 1. Estimate of counties 2.

Latitude 50—52. Local (Germ.) type of distribution.

Agrarian region. Inferagrarian zone.

Descends to the coast level, in Thames province.

Ascends to 50 yards, more or less.

Range of mean annual temperature 50—49.

Native. Septal, &c. Parasitical on "Galium Mollugo, Rubus fruticosus, &c." Reported from Berry Head, in Devon, on the authority of Mr. Borrer; but I think this was somewhere stated afterwards to have been a mistake. The county of Surrey is doubtfully mentioned above, under

an idea that the supposed Orobanche "lucorum," of Surrey, may possibly be identical with Smith's O. caryophyllacea. Otherwise, the South-east of Kent is the only habitat certainly ascertained for the present species.

OROBANCHE LUCORUM, *Braun.*

Area [3].

Incognit. It is very doubtful whether this name ought to appear in lists of British plants; but it was given to a species which has been found in plenty near Epsom, in Surrey. What that species truly is, I must confess myself still unable to say with any feeling of confidence, although I think it is not O. lucorum. Mr. Williamson, of the Royal Gardens at Kew, gives the following directions for finding the plant:—"From the back of the Grand Stand, on Epsom Race-course, proceed through the fields to the town of Epsom, and the plant will be found among clover (rarely among wheat) on the right hand side, on the back of the hill." (July, 1846.)

† OROBANCHE PICRIDIS, *Schultz.*

Area * * * 4 * 6.
South limit in Cambridge, Pembroke, —— ?
North limit in same counties, as far as yet known.
Estimate of provinces — ? Estimate of counties — ?
Latitude 51—53. English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, or nearly so.
Ascends to 50 yards, more or less.
Range of mean annual temperature 49—48.

Native. Agrestal? Parasitical on Picris hieracioides. Discovered at Comberton, near Cambridge, by the Rev. W. W. Newbould (Annals, August, 1848), whence I have a specimen from Mr. G. S. Gibson, through the Botanical Society of London. Mr. C. C. Babington informs me that it has been also found (by himself?—or by Mr. Newbould?) in an old and long-deserted quarry, near Giltar Head, Pembrokeshire. Having thus been discovered almost simultaneously in two counties so far apart, it may be expected elsewhere. The question will also arise, whether it had not been previously collected, but misnamed? If so, under what name was it recorded?

792. OROBANCHE ELATIOR, *Sutt.*

Area 1 2 3 4 5 6 7 8 * 10 11.
South limit in Dorset, Somerset, Wilts, Sussex.
North limit in Durham, York, Lincoln.
Estimate of provinces 10. Estimate of counties 25.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in Peninsula or Thames.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 50—47.

Native. Agrestal? Parasitical upon Centaurea Scabiosa, Knautia arvensis, and Carduus lanceolatus? O. major, of Linnæus, according to Fries, in Summa Vegetabilium, &c. I am quite unable to say how much of truth, or how much of error, there may be in the sketch of distribution given above; being compelled to receive most of the localities as I find them recorded in books, without the means of detecting those errors of nomenclature which

I much suspect to occur in reference to many of the localities for this and other native species of its genus.

792*. OROBANCHE AMETHYSTEA, *Thuil.*

Area 1.
South limit in Cornwall.
North limit in same county, so far as yet known.
Estimate of provinces 1. Estimate of counties 1.
Latitude 50—51. Local (Atl.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to —— ? (Altitude trifling.)
Range of mean annual temperature 52.
Native. Littoral? Parasitical on Daucus maritimus. Discovered lately by the Rev. W. S. Hore, at Whitsand Bay, near the Land's End, Cornwall. It may be expected elsewhere.

793. OROBANCHE MINOR, *Sutt.*

Area 1 2 3 4 5 6 * * * 10.
South limit in Cornwall, Devon, Isle of Wight, Kent.
North limit in York, Norfolk, Hereford.
Estimate of provinces 7. Estimate of counties 30.
Latitude 50—55. English (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 50—47.
Native. Agrestal, Pascual. Parasitical on Trifolia and Crepis virens. In attempting to trace the geographical

relations of the present species, I have left out of view all the localities recorded for "O. minor," in which it is mentioned as growing on Ivy; the species of the Hedera Helix being now considered quite distinct from the one here under consideration, and now described in recent works under name of O. barbata and O. Hederæ. This latter would seem to prevail in, if not limited to, the western counties; while the O. minor occurs chiefly in the eastern counties, and thus inclines to the Germanic type of distribution.

793*. OROBANCHE HEDERÆ, *Duby.*

Area 1 2 * * 5 6 7.
South limit in Cornwall, Isle of Wight, —— ?
North limit in Caernarvon, —— ?
Estimate of provinces 7. Estimate of counties 15.
Latitude 50—54. Atlantic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—49.

Native. Rupestral? Parasitical on Hedera Helix. The habitats for this species having usually been recorded under O. minor, it will at present appear more rare than is really the case. But uniting together the localities published for O. Hederæ or barbata, and those for "O. minor," in which the latter is expressly mentioned to grow on Ivy, we shall obtain records in the following counties:— Cornwall, Devon, Somerset, Isle of Wight, Gloucester, Monmouth, Glamorgan, Pembroke, Brecon, Merioneth, and Caernarvon; to which several others will very likely need to be added eventually.

794. OROBANCHE RUBRA, *Sm.*

Area 1 * * * * 6 * * * 10 * * * * 15 16 17.
South limit in Cornwall, Glamorgan? York?
North limit in Ross, Isle of Skye, Fife.
Estimate of provinces 6. Estimate of counties 7.
Latitude 50—58. Local (Brit.) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 50 yards, more or less, in England.
Range of mean annual temperature 52—47.
Native. Pascual or Rupestral? Parasitical on Thymus Serpyllum. Recorded from the counties of Cornwall (Mr. G. S. Gibson; Mr. C. C. Babington), Glamorgan (Mr. Gutch), York (Mr. James Ward), Fife (Dr. R. Graham, &c.), Argyle (H. C. Watson, &c.), Isle of Skye (Balfour and Babington), Ross (Mr. R. B. Bowman, in N. B. G.). Assuming these records to be correct, the wide area of this species, east and west, south and north, would connect it with the British type of distribution,—or, at least, prevents the reference of it to any other type; and yet the paucity of its localities brings it into strong contrast with the generally distributed plants of the British type.

795. OROBANCHE CÆRULEA, *Vill.*

Area * 2 3 4 * [6].
South limit in the Isle of Wight, Hants, Berks?
North limit in Norfolk, Herts.
Estimate of provinces 3. Estimate of counties 3.
Latitude 50—53. Local (Germ.) type of distribution.

Agrarian region. Inferagrarian zone.

Descends to the coast level, or nearly so.

Ascends to 50 yards, more or less, in England.

Range of mean annual temperature 51—49.

Native. Pascual. Parasitical on Achillea Millefolium. Dillwyn quotes the Swansea Guide, as the authority for this very scarce species being found on hilly pastures in Glamorganshire, which may be an error of name. Norfolk and Hants rest upon old authority, which it would now be desirable to verify and confirm afresh. Mr. Hurst mentions the occurrence of this species in "a clover-field near Cookham, through which the foot-path leads to Great Marlow, abundantly;" but possibly the purplish variety of O. minor may have been mistaken for the present species. I have specimens from the Isle of Wight (Dr. Bromfield) and Hertfordshire (Rev. W. H. Coleman).

795*. OROBANCHE ARENARIA, *Bork.*

Sarnian. "Parasitical upon Achillea Millefolium? in the Channel Islands." (Bab. Man. edit. 2.)

796. OROBANCHE RAMOSA, *Linn.*

Area (1 2 3 4).

Alien? If parasitical on Hemp alone, this species cannot be fairly deemed indigenous in England. Moreover, with the discontinuance of Hemp cultivation it has disappeared from most of its localities, formerly placed on record by authorities now becoming old and uncertain. It is said to have grown in Devon, Somerset, Hants, Kent, Suffolk, Norfolk, and Cambridge; but whether still to be found in

any of these counties I am not prepared to say. Professor Henslow allows it to remain as a Cambridgeshire plant, in his Catalogue of British Plants.

797. LATHRÆA SQUAMARIA, *Linn.*

Area 1 2 3 4 5 * 7 8 9 10 11 12 13 14 15 [16].
South limit in Devon, Isle of Wight, Kent.
North limit in [Argyle ?], Stirling, Edinburgh.
Estimate of provinces 15. Estimate of counties 40.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in Peninsula or Channel.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 50—47.

Native. Sylvestral. The extreme rarity of this plant in the Highland provinces, where only one locality seems quite to be relied upon, induces the assignment of it to the English type, notwithstanding that there appears no particular prevalence of it in the southern, as compared with the northern, provinces of England. According to Lightfoot's Flora Scotica, it was found by Mr. Stuart in Morvern, near the Sound of Mull, "on a dry heathy brae," to the east of the houses of Laggan,—a situation which appears very suspicious for a plant usually restricted to the roots of trees in complete shade. I have a specimen from Campsie Glen, which I suppose to be in Stirlingshire, collected by Dr. J. D. Hooker.

† ACANTHUS MOLLIS, *Linn.*

Area [1].

Incognit or Alien. Observed by Dr. Penneck, completely wild, near Penzance. (Jones' Tour. p. 31.)

798. VERBENA OFFICINALIS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * * * [15].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Northumberland, Anglesea.
Estimate of provinces 11. Estimate of counties 40.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.
Native. Viatical. The Catalogue of the Edinburgh Botanical Society does not recognize this plant as occurring in their circuit, so that I presume it has become extinct in the habitat published by Lightfoot, on authority of Dr. Parsons. Rather frequent in the southern counties of England; much less so in the northern.

799. SALVIA VERBENACA, *Linn.*
799, b. SALVIA CLANDESTINA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * * 14 15 * (17).
South limit in Cornwall, Isle of Wight.
North limit in Ross? Forfar? Fife, Edinburgh.
Estimate of provinces 14. Estimate of counties 40.
Latitude 50—57 (58). English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.
Native. Viatical, Pascual. I am unable to distinguish

these two alleged species in a satisfactory manner; and there can be no doubt that many of the localities recorded for S. pratensis must be referred hither, on account of mistakes between S. pratensis and S. verbenaca. The Rev. G. Gordon records the occurrence of this plant "between the Episcopal Chapel and Harbour, Fortrose, 1831" (Coll. Mor. 2.), but marks it as having been "certainly introduced." Proceeding southwards, we find a single locality at Dundee, given in the Flora of Forfarshire, qualified by a remark that it is there "probably the outcast of a garden." In the Catalogue of the Edinburgh Society, S. verbenaca is recognized as indigenous in the counties of the Forth, where it was recorded by Lightfoot and others. Babington localizes S. clandestina only on the "Lizard Point, Cornwall."

800. SALVIA PRATENSIS, *Linn.*

Area [1 2] 3 [4 5 6 7 8 * 10 11].
South limit in Kent.
North limit in Oxford.
Estimate of provinces 1. Estimate of counties 2.
Latitude 51—52. Local (Germ.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends nearly to the coast level.
Ascends to 50 yards, more or less.
Range of mean annual temperature 49—48.

Denizen. Pascual? This species has long been collected in abundance, although very locally, near Cobham, in Kent; and Mr. C. C. Babington informs me that he possesses a specimen from the neighbourhood of Middleton Stoney, in Oxfordshire; the latter probably being the locality particularly described by Mr. Saunders in the Mag.

Nat. Hist., new series, No. iii. 239. By name, it has likewise been recorded from numerous other counties; in most (or all) of which there is reason to fear that S. verbenaca was mistaken for S. pratensis.

801. LYCOPUS EUROPÆUS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Ross, Aberdeen, West-Inverness.
Estimate of provinces 17. Estimate of counties 70.
Latitude 50—58. British (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Paludal, Inundatal. An example of the English type by its diminishing frequency northward, but too widely distributed to be removed from the British or general type. Only two localities known for the North Highland province; namely, in Strathpeffer, Ross-shire, and "Loch Aichaltie, at Craigdarroch" (N. B. G.), in the same county. Possibly both these descriptions may indicate the same single habitat.

802. MENTHA ROTUNDIFOLIA, *Linn.*

Area 1 2 3 4 5 6 7 8 * 10 11 12 * [14 15 16].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Cumberland? Northumberland?
Estimate of provinces 11. Estimate of counties 25.
Latitude 50—56. English type of distribution.

Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Inundatal, Pratal, &c. Difficult to say where this species is truly indigenous, and where it has become established through the agency of mankind. Nor is this difficulty the only impediment in the way of making out the distribution of the plant; for there seems much reason to suspect that the names of M. sylvestris and M. rotundifolia have been frequently crossed and misapplied. Thus, in the first edition of Babington's Manual, we find the Isle of Arran indicated as the habitat for a variety, " velutina," of M. rotundifolia; but in the second edition, the variety and habitat are transferred to M. sylvestris. And I have *myself* occasionally been in doubt whether to refer certain specimens to this or to the other species. To which species does the " M. rotundifolia" of Winch (Flora N. D. and Contrib. Cumberland) really belong? If to M. sylvestris, then the area, census, &c. of the present species must be contracted within limits to correspond with the necessary correction.

803. MENTHA SYLVESTRIS, *Linn.*

Area 1 2 3 4 5 6 7 8 * 10 * 12 * 14 15 16.
South limit in Cornwall? Dorset, Sussex, Kent.
North limit in Moray? Forfar? Perth? Argyle?
Estimate of provinces 13. Estimate of counties 30.
Latitude 50—56 (58). English type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—46.

Native. Inundatal, Paludal. The observations made under the preceding species, M. rotundifolia, will indicate that the localities of this one also are liable to doubt in various instances; although it is probable that the more frequent error between them arises from giving the name of M. rotundifolia to specimens of the present species; thus causing the former to appear less rare, and the present species to appear more rare, than the facts would warrant if they were clearly and fully ascertained. Suspected to have been introduced to Moray and Forfar. Is it truly wild at Killin, Perthshire, and in Arran? If so, we may say cends to 150 yards in the East Highland province, on faith of the former locality.

804. MENTHA VIRIDIS, *Linn.*

Area 1 2 3 4 5 6 * 8 * 10 11 * * 14 15 * * (18).
South limit in Devon? Somerset, Wilts, Kent?
North limit in Forfar? Perth? Stirling? Edinburgh.
Estimate of provinces 11. Estimate of counties 20.
Latitude 50—56 (57). English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Denizen. Paludal, Inundatal, &c. In all likelihood, introduced to most of its recorded localities; but here, as in so many other instances, that mischievous habit with botanical collectors, of suppressing or misrepresenting facts, in order to make out an apparently favorable case for belief in the nativity of species, interposes a very serious bar against the progress of scientific truth in matters relating to the distribution of plants. On the whole, the evidence

appears rather in favour of this being truly a native species; although, if so, it can still be deemed really indigenous in very few of the provinces. Babington admits it as a native. Henslow marks it under suspicion. Hooker considers it introduced. In the Edinburgh Catalogue, it is recognized as indigenous, though rare, in the Forth circuit. I have seen it well established by a ruined house in Aberdeenshire, fully 400 yards above the sea level; where it would be in a mean yearly temperature of 42 degrees, or less.

805. MENTHA PIPERITA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * * 14 15 16.
South limit in Cornwall, Devon, Isle of Wight? Sussex.
North limit in Aberdeen? Forfar? Perth? Dumbarton.
Estimate of provinces 14. Estimate of counties 30.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Paludal, Inundatal. This species appears to be certainly indigenous in some of the southern provinces of England, and may even be so in Scotland likewise. But its recorded localities are subject to the same distrust, in consequence of many of them being artificial, and uncertainty, through errors of nomenclature, as those of the three preceding species were stated to be. I feel quite unprepared to indicate accurately the true northern limit, census, range of latitude, &c. of any of these four species.

806. MENTHA AQUATICA, *Linn.*
&c. &c.

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Ross, Aberdeen, Argyle.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 300 yards, in Cumberland.
Range of mean annual temperature 52—45.

Native. Paludal. This is probably a scarce plant in the three most northerly provinces. Said to grow near Killin, which is about 150 yards of elevation, in the East Highlands. I did not myself observe it in the Highland valleys. Mentha citrata or odorata, said to be a variety of the present species, has been reported from about a dozen of the English counties, though in some of these probably as an escape from gardens only.

807. MENTHA SATIVA, *Linn.*
&c. &c.

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 16.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray? Argyle, Fife.
Estimate of provinces 16. Estimate of counties 50.
Latitude 50—57 (58). English type of distribution.
Agrarian region. Superagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 52—47.

Native. Paludal, Inundatal, &c. Considered by the Rev. G. Gordon to be rare and doubtfully native in Moray. Unnoticed in the Flora Abredonensis and Flora of Forfarshire. Collected by Dr. Dewar near Cleish, in Kinross; and by Professor Balfour in Islay, Argyle. In the Edinburgh Catalogue it is marked as a species of the highest degree of frequency, like M. arvensis and M. hirsuta. Southward from the Forth, the recorded localities are numerous, and take most counties into the list of habitats; but how far it is indigenous in many of those published localities I am not able to declare. The distribution, as above set forth, may be construed to include M. sativa and M. rubra; for the nominal inclusion also of M. gentilis, M. gracilis, &c. will make very little difference in the area, census, &c. While far from satisfied with the arrangement of the species and quasi-species in the London Catalogue, I do not see my way to any more satisfactory substitute, and therefore still adhere to that arrangement here.

808. MENTHA ARVENSIS, *Linn.*
&c. &c.

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Orkney, Ross, Aberdeen, Argyle.

Estimate of provinces 18. Estimate of counties 80.

Latitude 50—60. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 350 yards, in East Highlands.

Range of mean annual temperature 52—43.

Native. Agrestal, Inundatal. Said to be very common in Moray; and it is the only species which I have observed in the mountain valleys of the Highland provinces. The various species of Menthaare much more characteristic of the English than of the Scottish flora. To the north and west of the Caledonian Canal only two species occur, and those very locally. None are enumerated in the Flora of Shetland, except M. viridis as an introduced plant. None were observed in the Outer Hebrides, by Balfour and Babington. Nor do I find any species of this genus mentioned among the plants which were observed by myself in Caithness, Sutherland, or Western-Inverness. M. arvensis, however, occurs in Faroe, and throughout Scandinavia. Possibly the county estimate of 75 might have been more correct for this and M. hirsuta.

809. MENTHA PULEGIUM, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 * [14] (15).
South limit in Somerset, Dorset, Isle of Wight, Kent.
North limit in Durham, Cumberland, Isle of Man.
Estimate of provinces 12. Estimate of counties 30.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Channel.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 50—47.

Native. Inundatal. In Babington's Manual this is entered as a species found in England, Scotland, and Ireland. I fear that Scotland is an error; as I know of only two habitats on record, and probably both ought to be rejected. Mr. W. Brand gave me a specimen picked near the Church of Birnie, where the Rev. G. Gordon deems it certainly

introduced. "Sides of springs on the Pentland Hills" is another alleged habitat; but the species is not recognized as one of the Edinburgh circuit, in the Catalogue published by the Botanical Society of that city; and the alleged habitat is suspicious in itself. Is the Cumberland locality, "Low Holm Mire," a native one? Possibly the estimate of 40 counties might prove too high; while that of 30 may be rather too low.

810. THYMUS SERPYLLUM, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Superarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 1150 yards, in West Highlands.
Range of mean annual temperature 52—35.

Native. Ericetal. Various botanists have supposed that two species are comprehended under the name of Serpyllum; and it may be that such is the fact, although hitherto they have not been clearly distinguished one from the other. The present, it will be observed, is one among the small number of species which extend from the south coast of England up to the superarctic zone in the Highlands.

811. ORIGANUM VULGARE, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16.
South limit in Cornwall, Isle of Wight, Kent.

North limit in Moray, Aberdeen, Argyle.

Estimate of provinces 16. Estimate of counties 60.

Latitude 50—58. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 52—47.

Native. Rupestral, Pascual. Possibly the full number of counties may rather exceed 60, but it is not likely they will count up to 70. The habitats of Dunkeld and the Ochills may imply a temperature so low as 46.

" ORIGANUM ONITES."

Area [3].

Incognit. On the left hand of the road from Braintree to Raine, beyond the bridge. (Mr. Dale, quoted in Hudson's Flora Anglica.)

812. CALAMINTHA ACINOS, *Clairv.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15.

South limit in Devon, Isle of Wight, Kent.

North limit in Moray, Aberdeen, Ayr.

Estimate of provinces 15. Estimate of counties 60.

Latitude 50—58. British (?) type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 52—47.

Native. Agrestal, Glareal. An intermediate example between the English and British types of distribution, with a slight leaning towards the Germanic type also.

813. CALAMINTHA NEPETA, *Clairv.*

Area 1 2 3 4 5 6 7 8 * 10 11 12.
South limit in Cornwall, Dorset, Sussex, Kent.
North limit in Durham? York, Isle of Man.
Estimate of provinces 11. Estimate of counties 25.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—48.
Native. Rupestral, Glareal. The recorded localities of this species are to be received with some distrust; small-leaved examples of C. officinalis, growing in dry or sterile places, having been frequently mis-called M. Nepeta. Not improbably the number of provinces is estimated too high, but I know not which, if any, of those indicated in the line of Area, should be rejected.

814. CALAMINTHA OFFICINALIS, *Mœnch.*

Area 1 2 3 4 5 6 7 8 9 10 11 12.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Durham, Westmoreland.
Estimate of provinces 12. Estimate of counties 40.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—48.
Native. Rupestral, Glareal. An extremely variable spe-

cies, approximating to C. Nepeta, on the one side, and to C. sylvatica on the other. My herbarium includes various specimens to which I know not whether the name of C. officinalis, or that of C. Nepeta, would most appropriately be given.

814*. CALAMINTHA SYLVATICA, *Bromf.*

Area * 2.
South limit in the Isle of Wight.
North limit in the same island.
Estimate of provinces 1. Estimate of counties 1.
Latitude 50—51. Local type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, or nearly so.
Ascends to 50 yards, more or less.
Range of mean annual temperature about 50.
Native. Sylvestral. Peculiar to the Isle of Wight, where it was discovered by Dr. Bromfield in August, 1843. See Phytologist, i. 768; also Eng. Bot. Supp. 2897.

815. CALAMINTHA CLINOPODIUM, *Spenn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Aberdeen, Lanark.
Estimate of provinces 16. Estimate of counties 70.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 yards, in East Highlands.
Range of mean annual temperature 52—43.

Native. Sylvestral. The West Highland province has been included in the estimate, although I find no certain locality there on record. A species which occurs in Lanark and Moray, and which ascends to 1000 feet and upwards in the county of Perth, would seem very likely to occur in Argyle or Dumbarton.

816. MELISSA OFFICINALIS, *Linn.*

Area (1 * 3 * 5 6).

Alien. Although not indigenous in Britain, this often-cultivated plant appears to be in process of establishing itself in the southern provinces.

817. MELITTIS MELISSOPHYLLUM, *Linn.*

Area 1 2 [3] * 5 6.

South limit in Cornwall, Devon, Hants, Sussex.

N. lim. in Cardigan, Pembroke? Glamorgan? Gloucester.

Estimate of provinces 4. Estimate of counties 8.

Latitude 50—53. Atlantic type of distribution.

Agrarian region. Inferagrarian zone.

Descends to the coast level, in the Peninsula.

Ascends to 50 or 100 yards, in England.

Range of mean annual temperature 51—49.

Native. Sylvestral. The four counties named for the southern limit of this species are certain, and have been repeatedly verified. Those mentioned for the northern limit are on the authority respectively of Miss Atwood, for Cardigan,—of Ray's work, repeated by subsequent writers, for Pembroke,—of the Swansea Guide, doubtingly quoted by Dillwyn, for Glamorgan,—of Buckman's Botanical Guide

to Cheltenham, for Gloucester. In addition, Cooper enumerates the species in his Flora Metropolitana; and Scott, in the History of Stourbridge, is referred to by Mr. Lees, as the authority for Worcester. Both the latter may be rejected unless confirmed by more safe authorities; although neither of these two habitats can be deemed very improbable in themselves.

818. TEUCRIUM SCORODONIA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Hebrides, Sutherland.
Estimate of provinces 18. Estimate of counties 81.
Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 400 yards, in East Highlands.
Range of mean annual temperature 52—43.

Native. Sylvestral, Septal. Like some other coppice and hedge-bank plants, this one grows chiefly in the fissures of rocks towards its upper limits. Wanting in the Flora of Shetland; and only a single locality is mentioned for it by Balfour and Babington, in their Catalogue for the Outer Hebrides. Absent from Faroe; and local in Scandinavia.

819. TEUCRIUM SCORDIUM, *Linn.*
819, b. TEUCRIUM SCORDIOIDES, *Schreb.*

Area 1 * 3 4 * * * 8 * 10.
South limit in Devon, Oxford, Cambridge, Norfolk?

North limit in York, Lincoln, Northampton.

Estimate of provinces 5. Estimate of counties 7.

Latitude 51—55. English type of distribution.

Agrarian region. Inferagrarian—Midagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 50 or 100 yards, in England.

Range of mean annual temperature 50—48.

Native. Inundatal. Very scarce. I have seen specimens from Devon and York. The counties of Oxford, Northampton, and Lincoln, appear to rest on old authority, not recently verified. Henslow and Babington would seem to have verified the habitat of Cambridge. Miss Bell is reported (Munford's West Norfolk list) to have found a single specimen at Stow Bridge.

821. TEUCRIUM CHAMÆDRYS, *Linn.*

Area (1 2 3 4 5 6 7 8 * * 11 * * * 15).

Alien. Recorded from many provinces; but almost invariably as an introduced species, either by implication from its alleged places of growth, or by such an opinion directly expressed. Apparently, however, Mr. Bicheno fancied that he had discovered it indigenous on the limestone crags above South Cornely, as reported in Dillwyn's Materials for a Fauna and Flora of Swansea.

TEUCRIUM BOTRYS, *Linn.*

Area [3].

Incognit? Found by Mr. Ingram, in a stony field at the back of Box Hill, between Brockham and the upper part of Headley Lane, "far from any house or garden," August

17, 1844. Mr. G. S. Gibson sought the plant unsuccessfully in 1848, and describes the locality as being in "a very stony and steep valley, facing the south, near the farther end of Box Hill, from Burford Bridge." . . . "It grew, I am informed, in tolerable plenty, over a limited space of ground, but unfortunately it is now (at least temporarily) destroyed by the land being ploughed up." (Phytologist, iii. 308.)

TEUCRIUM REGIUM, *Schreb.*

Area [5].

Incognit. "Said to have been found in the slope of the Blorenge, near Abergavenny, by Mr. E. Y. Steele, but I fear that some mistake has occurred. See Ann. Nat. Hist. v. 377." (Bab. Man. Brit. Bot.)

822. AJUGA REPTANS, *Linn.*
822, b. AJUGA ALPINA, *Aut. Ang.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Orkney.

Estimate of provinces 18. Estimate of counties 80.

Latitude 50—61. British type of distribution.

A. A. regions. Inferagrarian—Inferarctic zones.

Descends to the coast level, in the Peninsula.

Ascends to 750 yards, in East Highlands.

Range of mean annual temperature 52—39.

Native. Pratal, Sylvestral, &c. Not observed in the Outer Hebrides by Balfour and Babington; nor have I noted it in my lists of plants seen in Sutherland, Caithness,

or Western-Inverness. Gordon marks it as being very common in Moray. "Ajuga alpina" has been said to grow in Caernarvon, Derby, Durham, Westmoreland (?), Forfar, Aberdeen. Babington's Manual limits it to England and Ireland, excluding Scotland; but apparently he had seen no specimens from either country. The only examples of so-called A. alpina which I have seen, were the two specimens reported by the late Professor Graham (Excurs. 1831) and referred to in Gardiner's Flora of Forfarshire. I was with Dr. Graham when he picked those specimens, and one of them is now in my herbarium, undistinguishable from A. reptans, according to my own eyes.

823. AJUGA PYRAMIDALIS, *Linn.*

Area [1 * * * * * 7] * * * * * * * 15 16 17 18.
South limit in Argyle, West-Inverness, Moray.
North limit in Orkney, Hebrides, Caithness, Ross.
Estimate of provinces 4. Estimate of counties 7.
Latitude 56—60. Highland (?) type of distribution.
A. A. regions. Superagrarian—Inferarctic zones.
Descends to ——? (Nearly to the coast level?)
Ascends to ——? (Probably 500 yards and upwards.)
Range of mean annual temperature say 45—40.

Native. Pascual? A very scarce plant which few British botanists have seen in its indigenous habitats. The seven counties above mentioned, with those of Somerset and Caernarvon which were probably errors, have been reported for it. The present species has a far more general distribution in Scandinavia, than our own common and very general A. reptans. Whence these differences between them in Britain and Scandinavia? Being unaware of the altitudes at which A. pyramidalis has been found in Scot-

land, I am also at a loss about its range of temperature and climatal zones. Is the type of distribution Highland or Scottish?—Arctic or boreal? Maintains itself by seeds shed in my garden in Surrey, but rather as a biennial than perennial.

824. AJUGA CHAMÆPITYS, *Schreb.*

Area * 2 3 4 * [6 7].
South limit in Hants, Sussex? Kent, Surrey.
North limit in Cambridge, Northampton, Bedford.
Estimate of provinces 3. Estimate of counties 9.
Latitude 51—53. Germanic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Channel.
Ascends to 50 or 100 yards, in England.
Range of mean annual temperature 50—48.

Native. Agrestal. Reported from the seven counties mentioned above, with the intermediate ones of Essex and Herts; but Sussex is uncertain. Has also been recorded from Pembroke, erroneously, and as having occurred one year only near Welchpool, in Montgomery. I do not know whether the "Ajuga Chamædrys" of Dr. White, in the Botanist's Guide, intends this species or Teucrium Chamædrys: it is stated to have been found near York.

825. BALLOTA NIGRA, *Linn.*
825, b. BALLOTA RUDERALIS, *Fries.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 (15).
South limit in Cornwall, Isle of Wight, Kent.
North limit in Haddington, Edinburgh, Renfrew.

Estimate of provinces 14. Estimate of counties 50.
Latitude 50—60. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Viatical, Septal. I am aware of only one locality northward of the Forth; namely, in Moray, to which the Ballota has been " certainly introduced," according to the Rev. G. Gordon. As it is marked " frequent" in the Edinburgh Catalogue, there seems likelihood that it is not restricted to the southern side of the Firth of Forth, in that vicinity. I am unprepared to separate the localities or general distribution of B. ruderalis from those of B. nigra or fœtida. Apparently, the former occurs in the first five provinces, and also in that of Tyne; probably, in others.

826. LEONURUS CARDIACA, *Linn.*

Area 1 2 3 4 5 6 7 8 * 10 (11) 12 13 14 (15).
South limit in Cornwall, Devon, Sussex, Kent.
North limit in Edinburgh, Lanark. (Moray.)
Estimate of provinces 12. Estimate of counties 30.
Latitude 50—56. English (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Denizen. Viatical, Septal. Admitted as British by authors of our general Floras and Catalogues; but questioned by several writers on local botany. I have never seen it in any place which I could regard without much distrust of its real nativity. In illustrating the distribution by the

usual formula, I have therefore proceeded almost entirely upon the statements and records made by other botanists. Though found in Nairnshire, whence Mr. Stables has favored me with a specimen, it is entered in the Collectanea as a doubtful native of Moray.

827. LAMIUM GALEOBDOLON, *Crantz.*

Area 1 2 3 4 5 6 7 8 9 10 * * * (14) * [16].
South limit in Devon, Isle of Wight, Kent.
North limit in York, Lancaster;—or Edinburgh.
Estimate of provinces 11. Estimate of counties 40.
Latitude 50—55 (56). English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—48.

Native. Sylvestral, Septal. Three localities have been recorded for this plant in Scotland; namely, near a garden wall, Haddington, by Drs. Hope and Parsons; in Dalkeith Park, near Edinburgh, by Mr. Thomas Edmondston; near Oban, Argyleshire, by the label which accompanied a specimen sent to the Botanical Society of London by Miss Harvey. It is recognized as an indigenous plant of the Edinburgh circuit, in the Catalogue published by the Botanical Society of that city; but so likewise is the L. maculatum, as also various other introduced plants.

828. LAMIUM ALBUM, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 * * (18).
South limit in Cornwall, Isle of Wight, Kent.

North limit in Aberdeen, Stirling, about Glasgow.
Estimate of provinces 16. Estimate of counties 70.
Latitude 50—58. British (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Viatical. A very frequent plant in England; but becoming so infrequent in the Highland provinces as almost to require its position under the English type. It is enumerated in Lowe's list of Orkney plants. The Rev. G. Gordon deems it certainly introduced into Moray, and indicates only the single locality of "Dunfermline's garden, 1831" (Coll. Mor. 1839). In the Alvah Catalogue also marked as a doubtfully indigenous species, by Mr. W. A. Stables. Not common about Aberdeen. Southwards it becomes more plentiful, and is marked with the highest sign of frequency for the Edinburgh circuit. As it is stated in Flora Glottiana to be frequent about Glasgow, I take the West Highland province into the estimate, although I have no positive authority for its occurrence in that or the Lake province.

829. LAMIUM MACULATUM, *Linn.*
829, b. LAMIUM LÆVIGATUM, "*Linn.*"

Area (* * 3 * 5 * * 8 9 * * * 13 14 15 * 17).

Alien. Formerly much cultivated in gardens, while European species constituted the staple stock of hardy ornamental plants; and as it readily diffuses itself by seeds in a weed-like manner, it has become more or less fully established in many localities. In Babington's Manual, the habitats of "Fifeshire and Clova" are indicated for the L.

lævigatum. But the specimens distributed from Dr. Dewar, through the Botanical Societies of London and Edinburgh, and localized at Torrie, Fife, do not correspond with the L. lævigatum of the Linnean Herbarium; nor, writing from recollection of the Clova plants, do I think that the very few stray examples there seen would correspond much better. I consider that the sinking of L. maculatum, by Mr. Bentham, as a variety of L. album, if equally acted up to in other cases, would lead to the suppression of thousands of species generally so received; and that this course would be fully as confusing and injurious to the progress of real science (inductive and generalized science) as the opposite fault of hastily splitting species on account of trifling differences, without previous experiment, or even, as too often done, without careful and truth-seeking examination of a proper series of their individual forms. In avoiding Scylla, Mr. Bentham sweeps headlong into Charybdis.

830. LAMIUM AMPLEXICAULE, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Hebrides, Caithness, Sutherland.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—59. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—46.

Native. Viatical, Agrestal. In consequence of the recent separation of L. intermedium, as a species distinct from this present one, it becomes doubtful under which of the two some of the more northern habitats, recorded for

L. amplexicaule years ago, should now be placed. Both being mentioned in the list of Hebridean species, by Messrs. Balfour and Babington, and both as having been observed in various parts of the Outer Hebrides, there seems much likelihood that both may occur also in the counties of the North Highland province. Neither of them is mentioned in the Orkney lists; and only L. intermedium, in the Flora of Shetland.

830, b. LAMIUM INTERMEDIUM, *Fries*.

Area * * * * [5 * 7] * * * * * 13 14 15 16 * 18.
South limit in Caernarvon? Wigton, Edinburgh.
North limit in Shetland, Hebrides.
Estimate of provinces 6. Estimate of counties 20.
Latitude 54 (53)—61. Scottish (?) type of distribution.
Agrarian region. Midagrarian—Superagrarian zones.
Descends to the coast level, in the Lowlands.
Ascends to 100 or 200 yards, in Scotland.
Range of mean annual temperature 48—45.

Native. Viatical. Not satisfactorily ascertained in any English county, though stated to be "common in Scotland." Has been reported from Salop, on the authority of Mr. Leighton (Hook. Br. Flo. 4), but is not included in the Flora of Shropshire. There is a specimen from Bangor, Caernarvonshire, in my own herbarium, concerning which I am at a loss whether to call it L. amplexicaule or L. intermedium; and in this state of uncertainty, the province of North Wales is excluded from the area, &c. In Scotland, I have seen it in, or find it recorded from, Dumfries, Wigton, Ayr, Lanark, Edinburgh, Fife, Forfar, Argyle, Outer Hebrides, and Shetland; and it will likely enough be found in many other counties, including some of the

English. At present, I regard L. intermedium as a form of L. amplexicaule.

831. LAMIUM PURPUREUM, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 yards, in East Highlands.
Range of mean annual temperature 52—43.

Native. Viatical, Agrestal. A very common weed, which flowers through the winter season, unless at times when there is continued frost. The only species of its genus which occurs in Faroe; but it fails to reach Lapland.

831, b. LAMIUM INCISUM, *Willd.*

Area general?
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Hebrides.
Estimate of provinces 18. Estimate of counties 75.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—45.

Native. Viatical, Agrestal. Probably a variety of L. purpureum. The latter varies greatly in the form and

cutting of its leaves; thus rendering any satisfactory distinction between the two so-called species exceedingly difficult; the alleged difference in the number of teeth of the lower lip of the corolla not being obvious to me where I have looked for it.

832. GALEOPSIS LADANUM, *Linn.*

Area 1 2 3 4 5 6 * 8 9 10 11 * * 14 15 * * [18].
South limit in Devon, Isle of Wight, Kent.
North limit in Moray, Aberdeen (introduced ?).
Estimate of provinces 12. Estimate of counties 40.
Latitude 50—58. English (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Agrestal. Frequent in the south of England, decreasing northward and westward; extending too much into the south-western provinces, to be fairly referred to the Germanic type; almost too far northwards, for the strictly English type. It appears to be quite local in Scotland. Notwithstanding its comparative infrequency, however, should it prove to be really indigenous in Orkney and Faroe, from both of which insular groups it has been reported, the geographic type might be held intermediate between the British and Germanic, or the general and eastern.

833. GALEOPSIS OCHROLEUCA, *Linn.*

Area * * 3 * 5 * 7 8 9 10 11.
South limit in Essex, Notts, Caernarvon.

North limit in Durham, York, Lancaster.
Estimate of provinces 6. Estimate of counties 6.
Latitude 51—55. Local (Scot.) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in North Wales.
Ascends to 100 yards, more or less, in England.
Range of mean annual temperature 49—48.

Colonist. Agrestal. Besides the half dozen counties mentioned above, I have a manuscript note for Warwickshire, but suspect an error on the part of my informant. Lately discovered in Essex, by Mr. E. G. Varenne, according to Mr. Thomas Bentall (Phytol. iii. 356). The authorities for the other counties may be seen in the New Botanist's Guide; that for Lancaster (Hudson) requiring verification. Probably introduced by agriculture, and still quite local. Being chiefly, almost exclusively, found in the North of England, it may be deemed nearest to the Scottish type of distribution; but this is rather attributable to the accident of position, than to the climatal adaptation; for it is not properly a boreal plant in Britain or on the Continent.

834. GALEOPSIS TETRAHIT, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 400 yards, in East Highlands.
Range of mean annual temperature 52—42.

Native. Agrestal, Sylvestral. We have certainly two forms of this plant, easily recognized by the eye, and both common; but which offer to my examination no clear characters for written distinction as species. A frequent weed of the Highland corn fields, as well as in those of England; and often seen in coppices and on hedge-banks, where the ground had been lately disturbed.

835. GALEOPSIS VERSICOLOR, *Curt.*

Area * 2 3 4 5 * 7 8 9 10 11 12 13 14 15 16 17.
South limit in Sussex, Kent, Monmouth.
North limit in Ross, Aberdeen, West-Inverness.
Estimate of provinces 16. Estimate of counties 50.
Latitude 51—58. British (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in province of Ouse.
Ascends to 150 yards, in East Highlands.
Range of mean annual temperature 49—45.

Native. Agrestal. Gradually disappearing towards the two latitudinal extremities of Britain, though pretty frequent over a large intermediate area. If not deemed sufficiently general to be correctly referred to the British type, it must be assigned to the Scottish rather than to the English; for its chief prevalence is in provinces 8 to 16. Perhaps the estimate might have been carried up to 60 counties. The distinctness of this species has been doubted; but, according to the Rev. W. A. Leighton, its seeds produce only plants of its own kind. (See Mag. Nat. Hist. viii. 635.) While this unchanged reproduction, through one or few descents, cannot clearly establish specific distinctness, it affords an argument presumptively in favour thereof.

836. STACHYS BETONICA, *Benth.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Perth, Edinburgh, about Glasgow.
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.
Native. Sylvestral. As this occurs in Perthshire, and "not unfrequently" about Glasgow, probability seems to warrant the inclusion of the West Highlands in the provincial estimate. The habitats of Dupplin and Dunkeld, in Perthshire, indicate a near approach to the superagrarian zone, and possibly a mean temperature down to 46.

837. STACHYS PALUSTRIS, *Linn.*
837, b. STACHYS AMBIGUA, *Sm.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 yards, in East Highlands.
Range of mean annual temperature 52—43.
Native. Paludal, Agrestal. A variable species, and

varying much in regard to its situations of growth. Stachys ambigua is recorded from every province; but I must refer all the specimens sent to me, labelled by that name, to ordinary S. palustris, with the exception of one from the Botanical Society of London, communicated by Dr. Dewar, from the neighbourhood of Culross, in a part of Perthshire which is physically a portion of Fifeshire, and so taken in this work; possibly also excepting two others, from Orkney and Dumbarton. I have collected Smith's plant in Cornwall and Surrey; and while confessing myself unprepared to give any sufficient diagnosis in writing, I am still not quite certain that the true S. ambigua is identical with S. palustris, when taken apart from the slight varieties of the latter species which are frequently labelled as S. ambigua.

838. STACHYS SYLVATICA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 400 yards, in East Highlands (Dickie).
Range of mean annual temperature 52—43.
Native. Sylvestral, Paludal. I have seen this above 1000 feet in Perthshire, and Dr. Dickie says it grows at 1200 feet in Aberdeenshire.

839. STACHYS GERMANICA, *Linn.*

Area * * 3 4 * * * 8 * 10.
South limit in Kent? Berks, Oxon, Bedford.

North limit in York, Lincoln, Derby ?
Estimate of provinces 4. Estimate of counties 5.
Latitude 54—55. Germanic type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends nearly to the coast level, in Thames.
Ascends to 50 or 100 yards, in England.
Range of mean annual temperature 49—48.

Native? Sylvestral, Pascual? Usually allowed to pass muster among our really native plants. Not having seen it in any of its reported habitats, I am unable to say aught in the matter from my own experience or observation. Mr. Spruce says (Flora of Yorkshire) that it is plentiful in all the woods about Castle Howard, in the province of Humber. In that of Trent, the Rev. J. Davies stated (B. G.) that it was a common weed in the fields and hedges a little wide of Coltersworth, about eight miles from Grantham, in great profusion in the years 1794 and 1796, on the left hand side of the road to . . . . ? And it was said to have been found by Dr. Richardson four miles south of Grantham, near the London road opposite Easton. Another locality in the same province, that of Pinxton, Derbyshire, is quoted from Mr. Coke, in the Botanist's Guide. Truly wild at Luton Park, in Bedfordshire, according to the Rev. Dr. Abbott (Mr. Dawson Turner, mss.), but introduced thence to the " hill, two miles from Bedford," by Dr. Abbott himself, in order to have it nearer his own residence. I have one specimen from Oxfordshire, communicated to the Botanical Society of London, by Dr. Lloyd, who collected this species by the road-side between Hopcroft's Holt and Sturge's Castle, on the road from Oxford to Banbury. Other localities in the same county may be seen in the Botanist's Guides. Ducklington, Berkshire, is mentioned for this plant in the British Flora, &c. And it was once found at Earthiot, near Lyminge, in Kent, by

the Rev. Ralph Price. The comital estimate is taken at 5, because in 2 of the 7 counties the species seems not tainly to be found.

STACHYS ANNUA, *Linn.*

Area [* * (3) * 5].

Incognit. Said to have been found by Mr. Joseph Woods in a field of wheat, on the right of the road between Gad's Hill and Rochester, in 1830; to which it had probably been introduced with the seed wheat. Mr. James Carter enumerated it among plants seen near Cheadle, in Staffordshire; probably by some inadvertence of name, instead of S. arvensis.

840. STACHYS ARVENSIS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Sutherland, Ross.
Estimate of provinces 17. Estimate of counties 75.
Latitude 50—59. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—46.
Native. Agresial. Scarcely more than a 'Colonist' through agriculture in the North of Scotland.

841. GLECHOMA HEDERACEA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.

North limit in Orkney, Ross, —— ?
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—46.

Native. Sylvestral, Septal. Abundant in England; but apparently far from common in the Highland provinces. Absent from the lists for Shetland and the Outer Hebrides; nor did I happen to see it in Sutherland or Caithness. Observed in Orkney by Dr. Patrick Neill.

842. NEPETA CATARIA, *Linn.*

Area 1 2 3 4 5 6 7 8 * 10 11 * 13 14 15 * (17 18).
South limit in Cornwall, Isle of Wight, Kent.
North limit in Fife, Lanark, Berwick.
Estimate of provinces 14. Estimate of counties 40.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Septal, Viatical. In most counties of the first six provinces; much less general in the rest of England; very local in Scotland. One locality is mentioned in the Shetland Flora, which may be distrusted, because so far northward of any alleged native one. At Skelbo Castle, Sutherland, where it used formerly to be cultivated, according to the Rev. G. Gordon. Road-side between Culross and Kincardine, Fife, according to Mr. Maughan, quoted in Hooker's Flora Scotica. The author of the Flora of

Lanarkshire reports that he has seen a few plants of it by the border of a field at Craignethan, whence Hopkirk had reported it on anonymous authority. Found near Gateheugh, in the west of Berwickshire, by Mr. W. Baird, according to the Flora of Berwick. These are all the Scottish localities of which I am aware. The most northerly county from which I have seen a specimen, is that of Northumberland, whence it was sent to me by my very obliging correspondent Mr. Storey. Barely passes northward of the latitudinal line of 56, by its locality in Fifeshire.

843. MARRUBIUM VULGARE, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 (12) * 14 15.
South limit in Devon, Isle of Wight, Kent.
North limit in Fife, Haddington, Anglesea.
Estimate of provinces 13. Estimate of counties 40.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.
Native? Viatical. Not at all a common plant, and of very doubtful nativity in several of the localities which have fallen under my own observation. Though it occurs so far northward as Moray, the Rev. G. Gordon deems it certainly introduced to that habitat. It may be really wild on the coasts of the Firth of Forth.

844. PRUNELLA VULGARIS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 700 or 750 yards, in East Highlands.
Range of mean annual temperature 52—39.

Native. Pascual, Ericetal. This may rank among the commonest indigenous species, being abundant throughout Britain, with the exception of the higher mountains.

845. SCUTELLARIA GALERICULATA, *Linn.*

Area general.
South limit in Devon, Isle of Wight, Kent.
North limit in Hebrides, Ross, Isle of Skye.
Estimate of provinces 17. Estimate of counties 75.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Paludal. Frequent in England, although not in the class of the commonest plants there; apparently rather infrequent in Scotland. Professor Balfour enumerates it among the plants seen by himself "on Ben Lomond;" but as the base of Ben Lomond is very little above the tide level in the Clyde, the altitude of the locality noted by Dr. Balfour, may have been trifling; although the direct inference from the words themselves, if used by an individual known to express his ideas precisely, would have been otherwise.

SCUTELLARIA HASTÆFOLIA, *Linn.*

Area [3].

Incognit. Two specimens of this species came to the Botanical Society of London, from Hertfordshire. They were labelled from Ickleford Common, and under the name of S. galericulata. No additional information could be elicited by inquiries from the contributor, who of course would not be likely to recollect finding any other species than S. galericulata, real or supposed. S. hastæfolia is not very unlikely to occur in Britain, and the locality may be worth examining by some botanist who has the opportunity for doing so.

846. SCUTELLARIA MINOR, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 * * 16.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Dumbarton, Lanark, Durham.

Estimate of provinces 14. Estimate of counties 40 or 50.

Latitude 50—56. Atlantic (?) type of distribution.

Agrarian region. Inferagrarian—Superagrarian zone.

Descends to the coast level, in the Peninsula.

Ascends to 200 or 300 yards, in Devonshire.

Range of mean annual temperature 52—47.

Native. Uliginal. Looking at the provincial area, as given above, this species might seem too general in England for even an interrogative reference to the Atlantic type, notwithstanding that it is exclusively western in the Scottish provinces. But if we go a little further into particulars, it will appear more correctly referred to the

Atlantic than to the English type. With the exception of a few counties for which our floral lists are incomplete, this plant is found in all the westerly counties of England and the Lowlands, and plentifully in some of them. On the other hand, it is quite unknown in several of the eastern counties, which have been well explored botanically, and is a rare plant in most of those in which it has been detected. It is very rare, and perhaps confined to the single county of Suffolk (Dr. Bromfield!), in the province of Ouse; two localities are reported, and one of them on bad authority, for the province of Trent; three or four for that of Humber; and one only for the Tyne. Perhaps the temperature might be indicated as ranging down to 46. And I think the species was observed in Devon at 1000 feet or upwards.

847. MYOSOTIS PALUSTRIS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 * [17 18].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Forfar, Perth, —— ?
Estimate of provinces 16. Estimate of counties 75.
Latitude 50—57 (58). British type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Paludal. Three species, as they are now held to be, were formerly included under this name by British botanists. In consequence, doubts will arise in many cases to which of those three species the name has been applied by individual authors. According to my own opportunities for observation, the true M. palustris, or that described as

such in Hooker's British Flora and Babington's Manual, has the most restricted geographical range in Britain; and though probably the commonest of the three in the southern provinces and lower agrarian zone, yet it appears to become the most rare in the northern provinces and upper agrarian zone, if found at all in this latter zone, which it is not satisfactorily ascertained to be. In the Flora of Shetland, M. palustris and M. cæspitosa are enumerated; but there seems good reason to infer that the former name really intends the species M. repens. In the Catalogue of Hebridean plants, we find M. repens and M. cæspitosa, without M. palustris. In the Orkney Catalogue and Moray Flora, M. palustris is the only species, or only name, mentioned; and likely enough it there stands for the two species enumerated among the plants of the Hebrides. In Murray's Northern Flora, M. palustris and M. secunda are the two names used; but the descriptions here come in to assist us, and they show sufficiently well that the former name means the species M. cæspitosa, while the latter name is a synonym for M. repens. In the Flora Abredonensis, M. palustris and M. cæspitosa are enumerated; the former name probably intending the species M. repens, and the latter being applied correctly. In the Flora of Forfarshire, all the three species and names are included. I have collected the three species myself in Perthshire; but only M. repens and M. cæspitosa to the north of the Grampians. Still, it cannot be deemed unlikely that the true M. palustris will be found up to the North Highland province, in the low grounds. Dr. Dickie gives 1200 feet as the altitudinal limit of M. palustris in Aberdeenshire, probably intending M. repens. I have myself met with M. palustris in low situations only.

848. MYOSOTIS REPENS, *Don.*

Area * 2 3 * 5 6 * 8 * 10 11 12 13 14 15 16 17 18.
South limit in —— ? Isle of Wight, Kent.
North limit in Hebrides, Sutherland, Shetland ?
Estimate of provinces 18. Estimate of counties 75.
Latitude 50—59 (61). British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, or nearly so, in Channel.
Ascends to 700 yards, in East Highlands.
Range of mean annual temperature 50—40.

Native. Uliginal. The explanations above given under M. palustris, will show the uncertainty which attends our knowledge respecting the distribution of this species, which has been less usually distinguished from the former species, than has the more frequent M. cæspitosa. I have no authority for the occurrence of M. repens in the Trent province, except the Flora of Nottinghamshire, and I fear that the species really intended may be the M. cæspitosa. For the provinces of the Peninsula, Ouse, North Wales, and Mersey, it will be seen, I have no authority or record to be cited; but those provinces are all likely enough to justify their inclusion in the estimated census of a species, the full distribution of which has been hitherto so imperfectly ascertained or recorded. I am at present aware of localities in 25 counties only.

849. MYOSOTIS CÆSPITOSA, *Schultz.*

Area general.
South limit in —— ? Isle of Wight, Kent.

North limit in Shetland, Hebrides, ——?
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in Channel.
Ascends to 350 yards, in East Highlands.
Range of mean annual temperature 50—43.

Native. Paludal, Uliginal. I have no authority to cite for this species in Cornwall or Devon, beyond an indistinct recollection of having seen it in both those counties myself. At the other extremity of Britain, I am equally without authority for it in Orkney, Sutherland, or Caithness. Pretty frequent in the superagrarian zone in the Highland provinces, where I have never seen M. palustris, as before intimated under the latter species.

850. MYOSOTIS ALPESTRIS, *Sm.*

Area * * * * * * * * * * * * * * * 15.
South limit in Perthshire.
North limit in same county.
Estimate of provinces 1. Estimate of counties 1.
Latitude 56—57. Highland type of distribution.
Arctic region. Midarctic—Superarctic zones.
Descends to 1000 or 1050 yards, in East Highlands.
Ascends to 1300 yards, in same province.
Range of mean annual temperature 37—34.

Native. Rupestral. A very local plant, apparently limited to the mountains between Lochs Tay and Rannoch, in the north of Perthshire. By some botanists it is supposed to be an alpine state or variety of M. sylvatica; but I cannot say that the cultivation of it for a few years in my garden has much tended to convince me of the cor-

rectness of this view. As with many other alpine plants, cultivated for a while in my garden, the necessarily frequent sprinklings with water in dry weather, together with the shaded situations in which the plants require to be kept, cause them to be so much attacked by slugs, that they gradually become exhausted, and die away; although, while preserved from these pests, M. alpestris flourishes well under such cultivation, and will attain a larger size than is attained in its own Highland home.

851. MYOSOTIS SYLVATICA, *Ehrh.*

Area 1 2 3 4 5 * 7 8 9 10 11 12 13 14 15.
South limit in Devon, Sussex, Kent.
North limit in Aberdeen ? Forfar.
Estimate of provinces 15. Estimate of counties 40.
Latitude 50—57 (58). Scottish (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, or nearly so, in Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 49—47.

Native. Sylvestral. Infrequent or often overlooked. Dr. Murray includes it in the Northern Flora, without specifying any localities. It is omitted from those of Aberdeen and Moray. Two habitats are mentioned in the Flora of Forfarshire, on the respective authorities of Mr. A. Croall and Mr. J. Cruickshank, being the only evidence which I am prepared to cite for the existence of M. sylvatica in the East Highland province. Frequent within sixteen miles from Edinburgh, according to the Edinburgh Botanical Society's Catalogue; and therefore, probably, occurring on the Highland side of the Forth, in the county of Fife. Apparently too uncommon to be referred to the British type; and yet scarce sufficiently boreal for the Scottish.

852. MYOSOTIS ARVENSIS, *Sibth.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 400 yards, in East Highlands.
Range of mean annual temperature 52—43.
Native. Agrestal, Sylvestral. The commonest species of its genus in Britain. Occasionally approximating very much to M. sylvatica when growing on hedgebanks or in other shaded situations.

853. MYOSOTIS COLLINA, *Ehrh.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 * * 18.
South limit in Devon, Isle of Wight, Kent.
North limit in Shetland, —— ?
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 yards, in East Highlands.
Range of mean annual temperature 52—43.
Native. Glareal, Pascual. Formerly confused or united with M. versicolor; and therefore many of its habitats remain unrecorded, or are recorded erroneously, in the local Floras. I am aware of its occurrence in upwards of forty

counties; and as it is reported "abundant" even so far north as Shetland, I have reckoned upon its provincial generality, although unprepared to cite authorities for the West or North Highlands. Local in Moray; plentiful about Aberdeen; frequent in the Edinburgh circle. Neither this species nor M. versicolor are mentioned in the Catalogue for the Outer Hebrides.

854. MYOSOTIS VERSICOLOR, *Lehm.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, ——?
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 400 yards, in East Highlands.
Range of mean annual temperature 52—42.
Native. Glareal, Agrestal. Some distinctions require to be made between the habitats of this and M. collina, as already intimated under the latter species. According to the Flora of Shetland, M. versicolor is the less frequent of the two in those northerly isles.

855. LITHOSPERMUM OFFICINALE, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Devon, Isle of Wight, Kent.
North limit in Ross, Moray, Forfar, Argyle.
Estimate of provinces 17. Estimate of counties 70.
Latitude 50—58. British (?) type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.
Native. Sylvestral, Viatical, &c. An infrequent example of the British type; but not so exclusively or predominantly austral, as to warrant its assignment to the English type. I think it was seen in Cornwall by myself, although I do not find any memorandum to that effect among my notes.

856. LITHOSPERMUM ARVENSE, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Hebrides, Ross, Aberdeen.
Estimate of provinces 18. Estimate of counties 75.
Latitude 50—59. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—46.
Native. Agrestal. The Rev. G. Gordon regards this as an agricultural colonist in Moray; and it is marked as being doubtfully indigenous in the parish of Alvah, Banffshire. It is, however, rather a frequent weed of the corn fields in Eastern Scotland. Absent from the lists of plants for Shetland, Orkney, Sutherland, Caithness, West-Inverness, Islay and Cantire; so that it would seem to be infrequent in the North and West of Scotland.

857. LITHOSPERMUM PURPUROCÆRULEUM, *Linn.*

Area 1 * 3 * [5] 6 [7 * * * * 12].
South limit in Devon, Somerset, Kent.
North limit in Glamorgan.
Estimate of provinces 3. Estimate of counties 4.
Latitude 50—52. English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to 100 yards, more or less, in England.
Range of mean annual temperature 51—49.
Native. Sylvestral. A very local plant, which might have been referred to the Atlantic type but for the outlying habitat of Kent. The counties of Cumberland, Denbigh, Hereford, and probably Gloucester, have been erroneously recorded for this species; Anchusa sempervirens was mistaken for this in Denbighshire, and not unlikely in some of the other counties also.

858. STENHAMMARA MARITIMA, *Reich.*

Area [1 2 * * * 6] 7 * * * * 12 13 14 15 16 17 18.
South limit in Anglesea, Caernarvon, Berwick.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 8. Estimate of counties 25.
Latitude 53—61. Scottish type of distribution.
Agrarian region. Midagrarian—Superagrarian zones.
Descends to the coast level, in North Wales.
Ascends, at the coast level, to the North Isles.
Range of mean annual temperature 49—45.
Native. Littoral. Quite a boreal or Scottish plant;

rare on the West coast, and unknown on the East coast of England. Has been reported from Devon, Hants, and Cardigan, but upon unsafe authority.

859. SYMPHYTUM OFFICINALE, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Aberdeen, Forfar, Clyde counties.
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—58. English (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Paludal, Pratal. Notwithstanding the latitudinal range of this species so far northward as the vicinity of Aberdeen, rather above the line of 57, it is here referred to the English type of distribution on account of its decided prevalence in the South of England as compared with Scotland, together with its apparent absence from all parts of Scotland to the northward of Aberdeen and Glasgow, or their vicinities. The West Highland province has been reckoned in the estimate, because Hopkirk indicates the habitat in general terms, on the "banks of the Clyde, but not very common," which may possibly include the county of Dumbarton.

860. SYMPHYTUM TUBEROSUM, *Linn.*

Area (* 2) 3 4 5 * * 8 * 10 11 12 13 14 15 16.
South limit in Essex, Bedford, Stafford, Gloucester ?

North limit in Moray? Banff, Aberdeen, Argyle.
Estimate of provinces 12. Estimate of counties 25.
Latitude 51—58. Scottish type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in Ouse (and Thames?).
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 49—47.

Native. Sylvestral, Paludal. Supposed to have been introduced into Sussex, Surrey, and Herts. The Rev. W. H. Coleman describes a locality, near Dedham, in the north of Essex, which may be a native one; and several habitats are reported in the province of Ouse. Mrs. Russell indicates it at French Hay, near Bristol; but Dr. J. D. Hooker and Mr. Thwaites do not mark the name in their checked list of British plants found within ten miles of Bristol. Garner's Natural History of Staffordshire is the only other authority for the province of Severn, which I find in my compiled collection of notes, &c. The Rev. G. Gordon suspects that it may have been introduced into Moray.

SYMPHYTUM ASPERRIMUM, *Bieb.*

Area (1 * 3).

Alien. In the neighbourhood of Bath; also, at Duck Street, between Audley End and Littlebury, in Essex, according to Mr. G. S. Gibson. "S. asperrimum and S. orientale have both been noticed in an apparently wild state in England, but possess no claims to be considered as native." (Bab. Man.)

861. BORAGO OFFICINALIS, *Linn.*

Area (1 2 3 4 5 6 7 8 * 10 11 12 13 14 15).

Alien. Occasionally found on waste ground, and in places where rubbish heaps are formed; having formerly been much cultivated in gardens, and being still allowed to sow itself in many of them, as a sort of permitted weed.

862. LYCOPSIS ARVENSIS, *Linn.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Orkney, Hebrides.

Estimate of provinces 18. Estimate of counties 82.

Latitude 50—61. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 450 yards, in East Highlands (Dickie).

Range of mean annual temperature 52—42.

Native. Agrestal. With the exception of Myosotis arvensis, probably the commonest and most general weed of its natural order in Britain. I observed it near Castletown, in Aberdeenshire, at about 1000 or 1100 feet; and Dr. Dickie reports it even up to 1386 feet in that county.

863. ANCHUSA OFFICINALIS, *Linn.*

Area [1 * * * 5 * * 8] * * (11) * [13 * 15].

Alien. Has been many years established on the coast of Northumberland, to which it is believed to have been

introduced. Other habitats have also been reported, but all of them may be said to require verification. These dubious localities are mentioned in the New Botanist's Guide and Flora of Shropshire. That of Northumberland is thus described by my esteemed correspondent Mr. Storey. "Sand banks near Seaton Sluice, no doubt introduced. The patch of ground occupied by the plant, is about twenty-five paces in length, by fifteen in breadth." Mr. Winch says, "on the old ballast-hills, Hartley."

864. ANCHUSA SEMPERVIRENS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Ross, Aberdeen, Argyle.
Estimate of provinces 17. Estimate of counties 50.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 250 or 300 yards, in East Highlands.
Range of mean annual temperature 52—45.

Denizen or Alien. Viatical, Septal. Opinions are in conflict respecting the nativity of this species in Britain; and the weight of authority or of probability is in the adverse scale. Hooker marks it an alien. Henslow and Babington place it in their intermediate category of suspected, not certainly introduced, species. Among the several places in which it has been seen by myself, only one had the appearance of being a natural habitat; and the limited extent of space occupied by the plants in the place in question (that is, in hedges by the road from Barnstaple to Bishop Tawton, Devon) gave rise to a doubt even there. Dr. Bromfield says, "truly wild in a retired

lane, on a bank amongst weeds, a few miles from Plymouth." Mr. S. P. Woodward thought it "really wild at Lakenham," in Norfolk. And Mr. Tatham writes, "No doubt indigenous in the neighbourhood of Settle, Yorkshire, and very common." I have filled up the formula according to the reported distribution of the species, as was done in the case of Chelidonium majus, of Ribes Grossularia, and of other species much distrusted by myself, though widely established, and received as British by some botanists. There can hardly be a doubt, however, that all the Scottish habitats are of artificial origin, even although some few of the English may be considered otherwise.

865. ASPERUGO PROCUMBENS, *Linn.*

Area [1 2 3 4] 5 * 7 * * * 11 * * 14 15.
South limit in Kent? Salop, Caernarvon, Northumberland.
North limit in Moray, Forfar, Fife, Haddington.
Estimate of provinces 5. Estimate of counties 7.
Latitude 51—58. Scottish (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Thames province.
Ascends to 50 yards, more or less, in Scotland.
Range of mean annual temperature 48—47.

Denizen. Viatical. A dubious native, which has been said to grow in about fifteen counties, but erroneously reported in some of them. Reference may be made to the Botanist's Guides for the counties in detail, and for the authorities upon which they rest as habitats for this scarce plant. Mr. Edward Edwards adds the county of Kent, in Phytologist, i. 651. And a specimen passed through my hands, among some posthumous duplicates of Professor Graham, localized from Fife, on authority of Mr. Macnab.

I have seen and possess specimens likewise from Northumberland (Mr. Embleton), Haddington (Prof. Balfour), and Forfar (Mr. W. Gardiner). Occurs throughout Scandinavia, according to Fries; thus giving an à priori presumption in favour of its nativity in Britain.

ECHINOSPERMUM LAPPULA, *Lehm.*

Area (3 4).

Alien. "In one spot, upon shingle, near Southwold, Suffolk, in very small quantity; possibly introduced, but by what means I cannot conjecture, certainly neither with seed nor among ballast." (Bab. Man. ed. 2.)—"We found several plants of this on a newly-made part of the towing-path near Ware Mill in 1841. The seeds had probably been introduced among flax." (Flora Hertfordiensis.)

866. CYNOGLOSSUM OFFICINALE, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 * 14 15 * (17 18).
South limit in Devon, Isle of Wight, Kent.
North limit in Kincardine. (Orkney, Ross, Moray).
Estimate of provinces 15. Estimate of counties 60.
Latitude 50—57 (60). English (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Viatical. An infrequent plant in Scotland, and doubtful whether indigenous to the northward of the Grampians. Enumerated in the lists for Orkney, Ross, Moray, and Alvah; but in the two latter it is said to be certainly

introduced. Marked as frequent in the Edinburgh circuit. If native in Orkney or Ross, it should be referred to the British, rather than to the English type.

867. CYNOGLOSSUM SYLVATICUM, *Sm.*

Area * * 3 4 5 * * * * * * * * * [15].
South limit in Sussex, Kent, Surrey, Gloucester.
North limit in Salop? Warwick, Hunts, Norfolk?
Estimate of provinces 3. Estimate of counties 10.
Latitude 51—53. English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, or nearly so, in Thames.
Ascends to 100 yards, more or less, in England.
Range of mean annual temperature 49—48.

Native. Sylvestral, &c. A scarce plant, but reported from so many as fifteen counties. Perhaps the habitat near Tunbridge Wells may be partly in Sussex, and consequently in the second or Channel province. In addition to the eight counties above mentioned there are on record those of Oxford, Middlesex, Essex, Northampton, Worcester, Perth, and Forfar. Through the Botanical Society of London, I have obtained specimens from Surrey and Oxford. Some of the other counties mentioned are probably erroneous.

† CYNOGLOSSUM OMPHALODES, *Linn.*

Area (1 * * * * 6).

Alien. Said to have been formerly (is it still?) found among rocks at Teignmouth, Devon. In Dillwyn's Materials for a Fauna and Flora of Swansea, we are told that it

" has become perfectly naturalized on the rocks below the old castle at Penrice, and has every appearance of being wild, but is known to have been planted there upwards of half a century ago."

868. PULMONARIA OFFICINALIS, *Linn.*
868, b. PULMONARIA ANGUSTIFOLIA, *Linn.*

Area (1) 2 (3 4 5 6 7 8 * 10 11 12 13 14 15).
South limit in Isle of Wight.
North limit in Hants, —— York?
Estimate of provinces 1. Estimate of counties 1.
Latitude 50—51. Local (English) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, or nearly so.
Ascends to 50 yards, less or more, in England.
Range of mean annual temperature 51—50.

Native? Sylvestral. It would seem from the remarks of Dr. Bromfield (New Bot. Guide) that no clear distinction is to be found between these two plants, and that both grow really wild in the county of Hants. P. officinalis is reported from many other counties, but I fear that all of them are to be distrusted. P. angustifolia has been reported from Suffolk and Flintshire, but it is now known that Anchusa sempervirens was mistaken for the P. angustifolia in the latter county, as intimated in the Botanist's Guide, i. 292. What the Suffolk plant may be, I am not able to say. The " Pulmonaria virginica" of the Botanist's Guide, found near Newport, in the Isle of Wight, and also near Netley Abbey, in mainland Hants, was probably P. angustifolia. Is P. officinalis truly native in Yorkshire?

869. ECHIUM VULGARE, *Linn.*

Area 1 2 3 4 5 6 7 8 * 10 11 * 13 14 15 16 17 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Hebrides, Ross, Moray, Aberdeen.
Estimate of provinces 18. Estimate of counties 70.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—46.

Native. Glareal, Agrestal. The Rev. G. Gordon thinks this may have been introduced into Moray. Said to occur in elevated fields at Auchallader, upon the Invercauld property (Northern Flora), to which it may likely have been introduced. Inclines rather to the English type, by its decreasing frequency northward, and comparatively early limit. Though unprepared to cite authority for the provinces of Mersey and Lakes, I venture to reckon these in the provincial estimate.

870. ECHIUM VIOLACEUM, *Linn.*

Sarnian. Found only in Jersey; but it has, I think, been once or twice reported from English localities, though doubtless erroneously.

† ECHIUM ITALICUM, *Linn.*

Area [6 * * * * 11].
Incognit? "On Sunderland ballast-hills, at one time

far from rare, but imported from the Continent." (Winch, in Flo. N. D.) Is it still found at Sunderland, or has it become extinct there? In the Materials for a Fauna and Flora of Swansea, Dillwyn remarks that, in the Swansea Guide, this is said to grow on limestone rocks and pastures at Port Eynon, where a white variety of E. vulgare may have been mistaken for it; as, indeed, has been the case in some other counties also.

871. PINGUICULA GRANDIFLORA, *Lam.*

Hibernian. Found in the bogs of Kerry and Cork, but unknown in Britain proper.

"PINGUICULA LONGICORNIS, *Gay?*"

Area [12].

Incognit? Introduced into the Catalogue of British Plants, published by the Botanical Society of Edinburgh, in 1841. In the Phytologist for 1843, vol. i. 310, we are informed by Mr. C. C. Babington, that it is "an apparently distinct species, found by Mr. Jos. Woods in a valley near Helvellyn, and called by this name, of which there is no trace in any of the works to which I [C. C. B.] have access." But in the Manual of British Botany, published in the same year, the same writer informs us that "P. longicornis (Ed. Cat.) must be erased, having been introduced through a mistake." Are we to understand from these statements, that Mr. Woods did not find *Gay's* species?—or, that he did not find *any* "apparently distinct species?" If the former reading be correct, what did Mr. Woods find?

872. PINGUICULA VULGARIS, *Linn.*

Area general.
South limit in North Devon, Dorset, Hants.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 70.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in Ouse or ——?
Ascends to 950 yards, in East Highlands.
Range of mean annual temperature 49—37.

Native. Uliginal. Regarded as a plant referred to the British type of distribution, this species is very local in the southern counties of England. In this respect, notwithstanding its provincial generality, it inclines towards the Scottish type. But it has probably been rendered artificially much scarcer in England through the progress of enclosures and drainage of the wastes and bogs, where it may have formerly grown. Perhaps it rises to the superarctic zone in the West Highlands; attaining almost 900 yards on the Nevis range, where the Calluna fails considerably lower than that altitude.

873. PINGUICULA ALPINA, *Linn.*

Area * * * * * * * * * * * * * * * 16 17 [18].
South limit in the Isle of Skye, East of Ross.
North limit in the same places, or in Orkney?
Estimate of provinces 2. Estimate of counties 2.
Latitude 57—58 (60). Scottish type of distribution.
Agrarian region. Superagrarian zone.

Descends to the coast level, or nearly so.

Ascends to 50 yards, less or more, in Scotland.

Range of mean annual temperature 47—46.

Native. Uliginal. Discovered by the Rev. G. Gordon and Mr. Smith, in the Black Isle, Ross, in 1831. This circumstance brought to light the fact that a specimen from the Isle of Skye had been preserved in Sir J. E. Smith's herbarium, gathered so long ago as the year 1794, by Mr. Mackay. Barry also mentions P. alpina, as growing on the hills of Waes and Hoy, in Orkney, which Neill (Tour) supposed to be a mistake, but which may be deserving of investigation now that the species has been ascertained elsewhere in Scotland.

874. PINGUICULA LUSITANICA, *Linn.*

Area 1 2 * [4] * * * * * * * 12 13 * * 16 17 18.

South limit in Cornwall, Devon, Dorset, Isle of Wight.

North limit in Orkney? Hebrides, Sutherland.

Estimate of provinces 7. Estimate of counties 20.

Latitude 50—60. Atlantic type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 200 or 300 yards, in England.

Range of mean annual temperature 52—46.

Native. Uliginal. Distributed in a peculiar manner; being found chiefly at the two extremities of Britain, the south-western and north-western counties, with some intermediate habitats. It is thus rather too boreal for the strictly Atlantic (south-western) type, although much nearer to that than to any other. Besides the seven counties above mentioned, it has been reported from those of Somerset, Wilts, mainland Hants, Norfolk (erroneously), Isle of Man, "Gal-

loway," Ayr, Argyle, West-Inverness, and Ross. Some uncertainty attaches to the species of Orkney, which may be P. alpina or P. villosa. Occurs in the interior and on the east coast of Ross; otherwise known only near the southern, western, and northern coasts of Britain.

875. UTRICULARIA VULGARIS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 * 17 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Hebrides, —— ?
Estimate of provinces 18. Estimate of counties 70.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 500 yards, in East Highlands (Dickie).
Range of mean annual temperature 51—42.

Native. Lacustral. Not a common plant, although so widely distributed. In estimating the census, a provincial generality has been presumed, while I am still unprepared to cite any authority for the Lake province, and am uncertain about that of the West Highlands.

876. UTRICULARIA INTERMEDIA, *Hayne.*

Area 1 2 * [4 * * * * 9] * 11 12 * * 15 16 17.
South limit in Devon, Dorset, —— ?
North limit in Sutherland, —— ?
Estimate of provinces 6. Estimate of counties 10.
Latitude 50—59. Uncertain type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in Peninsula or Channel.

Ascends to 100 or 200 yards, in Scotland.

Range of mean annual temperature 51—46.

Native. Lacustral. The localities and distribution of this species are as yet very imperfectly known. Apparently, much confusion has occurred between this and P. minor. Both are very liable to be overlooked by botanical tourists, and they may even often escape the eyes of resident investigators.

877. UTRICULARIA MINOR, *Linn.*

Area general.

South limit in Somerset, Dorset, Isle of Wight, Sussex.

North limit in Hebrides, Sutherland, —— ?

Estimate of provinces 18. Estimate of counties 50.

Latitude 50—59. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 200 yards, more or less, in Scotland.

Range of mean annual temperature 50—46.

Native. Lacustral. Recorded from about forty counties only; but as it is a plant so likely to be overlooked, we may venture to raise the comital estimate to the next higher step in the series used; even that of fifty may eventually be found too low.

878. PRIMULA VULGARIS, *Linn.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Orkney, Hebrides.

Estimate of provinces 18. Estimate of counties 82.

Latitude 50—61. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 500 yards, in East Highlands.

Range of mean annual temperature 52—42.

Native. Sylvestral, Septal, &c. The generality and abundance of this favorite and familiar flower of spring, through the British Islands, is rather a characteristic feature in our native vegetation; for it seems to be by no means so general through the corresponding latitudes of the Continent. Probably ascends into the arctic region, but on this point I can speak only from a recollection which is not sufficiently exact to warrant the indication of a higher altitude than is given above.

879. PRIMULA ELATIOR, *Jacq.*

Area * * 3 4.

South limit in Essex.

North limit in Suffolk.

Estimate of provinces 2. Estimate of counties 3.

Latitude 51—53. Local type of distribution.

Agrarian region. Inferagrarian zone.

Descends to the coast level, or nearly so.

Ascends to a trifling elevation above the coast level.

Range of mean annual temperature 49—48.

Native. Pratal. The varieties of P. vulgaris, or the hybrids between that species and P. veris, have been so very frequently mistaken for this apparently distinct species, that it becomes necessary to reject every locality reported for "Primula elatior," unless in those instances where specimens have been laid before some botanist fully prepared to discriminate between the true and the false P.

elatior. The true species has been observed in different localities in Essex; and Mr. Bentall gives me also that of Finborough, in Suffolk. Possibly, too, the "peculiar variety" of Oxlip, which is said to grow "in great plenty," at Westhoe, a few miles from Cambridge, may prove to be true P. elatior (Jacq.) Little reliance can now be placed on such of the experiments which appeared to establish the specific identity of P. veris, P. elatior, and P. vulgaris, as were made previous to 1842; because the real characters by which these plants are to be distinguished one from another, were then very imperfectly understood by British botanists.

880. PRIMULA VERIS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 * 17 18.
South limit in Devon, Isle of Wight, Kent.
North limit in Orkney, Caithness, Sutherland.
Estimate of provinces 18. Estimate of counties 75.
Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 450 yards, in East Highlands.
Range of mean annual temperature 51—42.

Native. Pratal. Possibly the comital estimate might have been better placed at 80 than at 75. But P. veris would seem to be an uncommon plant in the west of Scotland.

881. PRIMULA FARINOSA, *Linn.*

Area * * [3 * * * 7] * 9 10 11 12 * 14 * * [17 18].
South limit in Lancashire, Yorkshire.

North limit in Cumberland, Peebles, Edinburgh?
Estimate of provinces 5. Estimate of counties 8.
Latitude 54—56. Scottish type of distribution.
Agrarian region. Midagrarian—Superagrarian zones.
Descends probably below 50 yards, in the North of Engl.
Ascends to 200 or 300 yards, in Humber and Tyne.
Range of mean annual temperature 47—45.

Native. Pascual, Uliginal. A somewhat anomalous example of the Scottish type, which occurs principally in the northern counties of England, and only very locally in the Lowlands of Scotland. The range of the species has been unduly extended northward and southward; the former, through confusing with it the more boreal Primula scotica; while southward, it has been stated to grow in the counties of Kent and Flint (B. G.); the one being doubtless erroneous, and the latter resting on authority which is insufficient to establish the fact. In addition to the five counties mentioned, it is said to occur in Durham, Northumberland, and Westmoreland.

882. PRIMULA SCOTICA, *Hook.*

Area * * * * * * * * * * * * * * [15] * 17 18.
South limit in Sutherland, Caithness.
North limit in Orkney.
Estimate of provinces 2. Estimate of counties 4.
Latitude 58—60. Scottish type of distribution.
Agrarian region. Superagrarian zone.
Descends to the coast level, in North Highlands.
Ascends to 50 or 100 yards, in same province.
Range of mean annual temperature say 46—44.

Native. Ericetal, Uliginal. A very local and boreal example of the Scottish type, ascertained only in the coun-

ties of Sutherland and Caithness, and in the Orkney Isles. The probability that it may yet be found in some other of the northern counties or isles has induced to the estimate of counties being set above at 4 instead of 3. Indeed, it may possibly have been already found in a fourth county, although no sufficient authority has been as yet given for the more extended area which would be implied in the following intimation :—"It has been said that this plant has been gathered near Culbin; most likely some other was mistaken for it." (Notes to Coll. Mor. 8.)

883. CYCLAMEN HEDERÆFOLIUM, *Willd.*

Area * * 3 4 * (6 * 8).
South limit in Kent.
North limit in Suffolk ?
Estimate of provinces 2. Estimate of counties 2.
Latitude 51—53. Local (Germ.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends nearly to the coast level, in Thames.
Ascends to 50 yards, more or less, in England.
Range of mean annual temperature (about) 49.

Denizen. Sylvestral. Found in woods about Sandhurst, in Kent. Has also been reported from Suffolk, Pembroke (a single plant), and Notts (plentifully); but it is doubtful whether these all belong to C. hederæfolium, or partly to C. europæum. Hooker discards this plant from the indigenous list; Henslow and Babington admit its nativity undisputed.

884. TRIENTALIS EUROPÆA, *Linn.*

Area * * * * * * * * * 10 11 12 * 14 15 16 17 18.
South limit in York, North Lancashire.
North limit in Shetland, Ross, Aberdeen.
Estimate of provinces 8. Estimate of counties 20.
Latitude 53—61. Scottish type of distribution.
A. A. regions. Superagrarian—Midarctic zones.
Descends below 50 yards, in East Highlands.
Ascends to 900 or 950 yards, in same province.
Range of mean annual temperature 46—37.
Native. Ericetal. The locality in Edinburghshire, and perhaps some of the others, may bring this plant within the limit of the midagrarian zone. Is it wholly absent from the West Lowland counties?

885. HOTTONIA PALUSTRIS, *Linn.*

Area 1 2 3 4 5 * 7 8 9 10 11 12 * * [15].
South limit in Dorset, Hants, Sussex, Kent.
North limit in Westmoreland, Durham.
Estimate of provinces 12. Estimate of counties 40.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 50 or 100 yards, in England.
Native. Lacustral. Apparently very local in the Western counties, being still unrecorded from Cornwall, Devon, South Wales, and the adjacent counties of North Wales and the Severn province. The only habitat recorded in Scotland, that of Carreston, Forfarshire, cannot be trusted;

especially as the record appears in no botanical work, except in form of a distrusted reference in Gardiner's Flora of Forfarshire.

886. LYSIMACHIA VULGARIS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16.
South limit in Devon, Isle of Wight, Kent.
North limit in Aberdeen, Argyle (Isle of Mull).
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—58. British (?) type of distribution.
Agrarian region. Superagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—46.
Native. Paludal. Intermediate between the British and English, or the general and austral, types of distribution; and rising only just within the superagrarian zone.

887. LYSIMACHIA THYRSIFLORA, *Linn.*

Area * (2) [3 * * * 7] 8 [9] 10 * [12] 13 14 15 16.
South limit in Notts. [Cheshire? Anglesea?].
North limit in Forfar, Stirling or Dumbarton.
Estimate of provinces 6. Estimate of counties 9.
Latitude 51—57. Scottish type of distribution.
Agrarian region. Midagrarian—Superagrarian zones.
Descends to the coast level, in Scotland.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 49—47.
Native. Paludal. A very local plant, found chiefly in the north of England and middle of Scotland. Reported

to occur in Wilts (probably introduced, as I learn from Mr. T. B. Flower), Herts (an error,—see Flo. Hertf.), Anglesea, Notts (sent to the Rev. M. J. Berkeley), Chester, York, Cumberland (Hutton), Lanark, Edinburgh, Stirling, Forfar, Aberdeen (error), and Dumbarton; for all of which, except as above given, the authorities may be found in the New Botanist's Guide. It has appeared better to omit some of these counties from the estimated census, until verified by competent botanists of the present day.

LYSIMACHIA CILIATA, *Linn.*

Area (9 * * 12).

Alien. This species may serve as an example of the gradual manner in which we may be deceived into the adoption of an alien as a truly British plant, by relying upon careless reports or untrustworthy statements. To illustrate what is here meant, I will simply quote certain passages from different works which have been printed within these few years, directing attention to some sentences and contrasts more strongly by the use of italic letters, which do not occur in the originals.

"Mr. James Backhouse informs me that his relative, Mr. W. Backhouse, of Darlington, found L. ciliata, which has crenate petals and ten free filaments, although only five fertile stamens, *in plenty*, near the road side at about halfway between Wigton and Penrith, Cumberland." (Bab. Man. edit. 1. 1843.)

"Lysimachia ciliata I found, by a direction kindly sent to me by the late Mr. W. Backhouse, immediately before his death, in the place where he discovered it, between Penrith and Wigton. It is by the road-side, near Sebergham. The plant forms *one large patch*." (Mr. Borrer, in Phytologist, Feb. 1846.)

"Lysimachia ciliata, which was first noticed by W. Backhouse, between Penrith and Wigton, has been discovered in a fresh locality *at the foot of Warnell Fell*, Cumberland, *a wild situation*, thus leaving *no reasonable doubt of its being a native plant.*" (Mr. G. S. Gibson, in Phytologist, Jan. 1846.)

"Mr. Wright had 'found it [Lysimachia ciliata] in 1832,' *in a slate quarry in Warnell Fells*, about a mile from Mr. Backhouse's place. The 'one specimen which he gathered, and preserved a long while in his pocket-book,' was unfortunately lost. '*The Andromeda was growing near it.*' I visited the quarry with Mr. Wright, but it had been extended on the side 'where he had seen the plant,' which was consequently no longer there. *There never could have been a bog for the Andromeda.*" (Mr. Borrer, in Phytologist, Feb. 1846.)

"L. ciliata." ..... "Possibly introduced, but now having the appearance of being a true native." (Bab. Man. edit. 2. 1847.)

"LYSIMACHIA PUNCTATA, *Linn.*"

Area [11].

Incognit. Introduced into the British Flora by an error; a form of L. vulgaris, with axillary and unbranched pedicels, having apparently been mistaken for L. punctata.

888. LYSIMACHIA NUMMULARIA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 [12] 13 14 [15].
South limit in Devon, Dorset, Sussex, Kent.
North limit in Lanark, Berwick, Edinburgh ? Forfar ?
Estimate of provinces 13. Estimate of counties 50.
Latitude 50—56 (57). English type of distribution.

Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Pratal, Paludal. Uncertain as a native of Scotland; but there scarcely appear grounds for distrust sufficient to justify a rejection of the Scottish provinces and counties altogether from the estimated census, &c. It is said to occur in Dumfries (Lightf. Flo. Scot.), Lanark (Flo. Lan. and Flo. Glott.), Roxburgh (Rev. James Duncan), Berwick (Dr. G. Johnston, in Flo. N. D.), Edinburgh (Mr. Thomson, in Graham's Excurs.), and on shady banks of the Esk, Forfarshire, abundantly (D. Don, in Hook. Flo. Scot.); but it is altogether omitted from Gardiner's Flora of Forfarshire.

889. LYSIMACHIA NEMORUM, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Ross, Aberdeen, West-Inverness.
Estimate of provinces 17. Estimate of counties 75.
Latitude 50—58. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 800 yards, in East Highlands.
Range of mean annual temperature 51—38.

Native. Sylvestral. According to the Summa Vegetabilium of Fries, it would seem that Lysimachia nemorum is more exclusively a plant of the austral type in Scandinavia, than is the L. nummularia. In Britain, as will be seen from the formula, their differences are just the reverse; L. nemorum being far the more widely and generally distributed of the two species.

890. ANAGALLIS ARVENSIS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Kincardine, Argyle.
Estimate of provinces 16. Estimate of counties 70.
Latitude 50—58. British (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Agrestal. Although this pretty weed is extended over a wide range of latitude, it decreases so much in abundance in Scotland, comparatively with the southern provinces of England, as to approximate very closely towards plants of the English type of distribution. And since our northern botanists appear to hold it scarcely native beyond the Grampians, if even truly so beyond the estuary of the Tay, it can barely be deemed an inhabitant of the superagrarian zone. Possibly 60 might prove a more correct county estimate than 70, which is taken above.

890, b. ANAGALLIS CÆRULEA, *Sm.*

Area 1 2 3 4 5 6 * 8 9 10 11 * 13 * 15.
South limit in Devon, Isle of Wight, Kent.
North limit in Aberdeen ? Perth, Glasgow.
Estimate of provinces 12. Estimate of counties 30.
Latitude 50—58. English (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 51—47.

Colonist. Agrestal. Scarce, and apparently fugitive; soon disappearing again from many of the places in which it has been seen once or occasionally. Much difference of opinion has prevailed respecting the distinctness of this plant from the A. phœnicea, or red-flowered A. arvensis. An idea has been suggested by Mr. Borrer, that there are really two species, each of which may vary with red or blue flowers. Analogy favours this view; and it meets some difficulties about the supposed two species, which cannot conveniently be entered upon here. For some experiments of sowing seeds of A. cærulea, references may be made to the Magazine of Natural History, v. 493, and viii. 634; also to Phytologist, i. 164.

891. ANAGALLIS TENELLA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 * 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 75.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 200 or 300 yards, in same province.
Range of mean annual temperature 52—45.

Native. Uliginal. Although so widely spread through Britain, that there can be no hesitation in referring this plant to the British type of distribution, it yet has so much of the insular or occidental and austral prevalence, as to suggest an affinity with the plants of the Atlantic type. This affinity becomes much more evident when we embrace a wider area; for, while the species passes north-

ward into the insular group of Faroe, it is unknown in Denmark and Norway, with other of the Baltic countries.

892. CENTUNCULUS MINIMUS, *Linn.*

Area 1 2 3 4 5, 6 7 * 9 10 * 12 13 14 15.
South limit in Devon, Isle of Wight, Kent.
North limit in Moray, Forfar, Ayr, Glasgow.
Estimate of provinces 14. Estimate of counties 50.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Channel.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.
Native. Inundatal, Ericetal. Either frequently overlooked from its diminutive size, or a thinly scattered example of the British type. The estimate of 50 counties is much higher than the number for which good authorities can be cited at present.

893. SAMOLUS VALERANDI, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Fife, Argyle.
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Lowlands.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.
Native. Paludal, Inundatal. More frequent near the

coast than inland. As a maritime plant, it appears to be very widely scattered about the earth.

894. GLAUX MARITIMA, *Linn.*

Area general ?
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 60.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends, at the coast level, to the North Isles.
Range of mean annual temperature 52—45.

Native. Littoral. Occurs in upwards of 50 counties, though probably not quite in so many as 60. In the province of Severn, it has been found far inland where the earth or the water is of a saline character, as in Worcestershire and Staffordshire. See Phytologist, i. 331, and iii. 512; also Garner's Nat. Hist. Staff. 357.

895. ARMERIA MARITIMA, *Willd.*

Area general ?
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 60.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 1200 yards, in East Highlands.
Range of mean annual temperature 52—35.

Native. Littoral, Rupestral. All around the coasts of Britain; also, on the summits of various mountains; more rarely, upon rocks in the mountain-valleys. A question is attached to the indication of a general area above, because I am not prepared to adduce a published record or authority for the occurrence of the species on the coast of the Trent province; the void doubtless being attributable to the absence of any list of Lincolnshire plants, excepting a few of the rarer species. One or two of our subordinate forms of this species are now supposed to be distinct.

896. ARMERIA PLANTAGINEA, *Willd.*

Sarnian. A plant of Jersey, hitherto not discovered on the coasts of Britain properly so called.

STATICE TATARICA, *Linn.*

Area [2].

Incognit. This name has got among those of English plants by a strange error on the part of Dr. Lindley, who is said to have thus designated the Statice rariflora, on the first discovery of that species in England; although it is very difficult to conceive any botanist, even the most humble tyro, mistaking the one for the other, after having seen both species. Among botanists Dr. Lindley holds a high place, and most deservedly so; somewhat vulgarized though his name and fame unfortunately may be by the clumsily applied puffery of incompetent scribes in the Gardener's Chronicle. And yet, as if expressly to show how much of excellence, and how much of inferiority, may be found in the writings of the self-same individual, we have seen

'*The Vegetable Kingdom*' and '*A Synopsis of the British Flora*,' from the pen of the same author! Both are compilations in some sense, and yet how dissimilar! The former is the digest of a master thoroughly conversant with his subject: the latter might have been the faulty compilation of a pupil, who had his subject yet to learn. This low estimate of the Synopsis is mentioned here, where the opportunity is given, in order to account for the small respect towards Dr. Lindley's authority *in connexion with British botany*, which is exhibited in the pages of the present work, and in other publications by the same writer. The disregard of Dr. Lindley as a British botanist, or simply as a botanist of species, will not be misconstrued into a non-appreciation of his high merits on other grounds, where he may be more at home.

897. STATICE LIMONIUM, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 * * * * [18].
South limit in Cornwall? Isle of Wight, Kent.
North limit in Dumfries, Berwick or North Durham.
Estimate of provinces 13. Estimate of counties 30.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends, at the coast level, to the Peninsula.
Ascends, at the coast level, to the W. Lowlands.
Range of mean annual temperature 52—48.

Native. Littoral. Frequent on the coasts of England; very local on those of Scotland, and not yet recorded from the East Lowlands, unless that province be considered to extend rather beyond the strict political limits of its counties. Between Northumberland and Berwickshire is a small tract of country which belongs to Durham politically,

although divided from this latter county by the whole length of Northumberland, and usually distinguished as North Durham or Islandshire. By geographical proximity this tract belongs to Berwickshire, rather than to Durham; and being so associated in the 'Flora of Berwick-on-Tweed,' the range of which is extended southwards to Holy Island, it may be more natural and more convenient to regard 'Islandshire' as a portion of the East Lowland province. Statice Limonium is recorded to grow in Holy Island; and thus may be received as a plant of the East Lowlands. Jones (Tour) records the present species as a plant observed in Cornwall; but Mr. Pascoe finds only S. spathulata in the locality given.

898. STATICE RARIFLORA, *Drej.*

Area 1 2 3 4 * * * * * * * * 13.
South limit in Devon, Hants, Sussex, Kent.
North limit in Wigton, Suffolk, ——— ?
Estimate of provinces 6. Estimate of counties 10.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends, at the coast level, to the Peninsula.
Ascends, at the coast level, to West Lowlands.
Range of mean annual temperature 51—48.

Native. Littoral. This was long regarded as a variety of S. Limonium, and occasionally confused with S. spathulata. The localities are consequently still very little known. The plants of the southern coast of England, and those of the West Lowland province, differ somewhat from each other; but if identical species we may expect the discovery of other intermediate localities. The counties above

mentioned are all that have hitherto been announced for S. rariflora, as far as I am aware of them.

899. STATICE SPATHULATA, *Desf.*

Area 1 2 3 4 * 6 7 * 9 * * 12 13.
South limit in Cornwall, Dorset, Sussex, Kent.
North limit in Wigton, Cumberland, Norfolk.
Estimate of provinces 10. Estimate of counties 20.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends, at the coast level, to the Peninsula.
Ascends, at the coast level, to the West Lowlands.
Range of mean annual temperature 52—48.

Native. Littoral. Like the S. rariflora, the present species also appears to attain its northern limit at a much lower latitude on the east than on the west coast. Whether this peculiarity is real, or whether it arises from imperfect knowledge only, cannot be satisfactorily determined until we obtain more complete information respecting the botany of the coast-line in the provinces of Trent and Humber.

900. STATICE RETICULATA, *Linn.*

Area [1 2] * 4 * * [7 8 * * * 12].
South limit in Norfolk, Cambridge.
North limit in same counties.
Estimate of provinces 1. Estimate of counties 2.
Latitude 52—53. Local (Germ.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends, at the coast level, to province of Ouse.

Ascends, at the coast level, to same province.
Range of mean annual temperature about 49.
Native. Littoral. In addition to the two counties above mentioned, this species has been reported to occur also in those of Somerset, Kent, Caernarvon, Lincoln and Cumberland; but in most, if not all, of those counties, the S. spathulata had been mistaken for S. reticulata. It is likely enough that both species may be found on the coast of Lincoln.

901. PLANTAGO MAJOR, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 500 or 550 yards, in East Highlands.
Range of mean annual temperature 52—41.
Native. Pascual, &c. One of the most universal plants throughout the agrarian region.

902. PLANTAGO MEDIA, *Linn.*

Area 1 2 3 4 5 6 7 8 * 10 11 * 13 14 15 * * (18).
South limit in Dorset, Isle of Wight, Kent.
North limit in Forfar, Fife, Glasgow. (Shetland?)
Estimate of provinces 14. Estimate of counties 50.
Latitude 50—57 (61). English (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.

Descends to the coast level, in Channel province.

Ascends to 150 or 200 yards, in England.

Range of mean annual temperature 51—47.

Native. Pascual, &c. Abundant in many parts of England, where the soil is calcareous, as in the chalk tracts. Edmondston gives one habitat, "near Scalloway," in Shetland; and the name occurs in Lowe's list of Orkney plants. But when we find no mention of the species in the list of plants observed in the outer Hebrides, Sutherland, Caithness, Ross, Moray, Banff, West Inverness, Argyle, Perth, &c., some distrust of the alleged habitats in the more northerly groups of isles may reasonably be entertained. The author of the Flora Abredonensis does not appear to have met with the species in the neighbourhood of Aberdeen, and refers to the Northern Flora for an authority in evidence of its occurrence in his district. Two localities are mentioned in the Flora of Forfarshire.

903. PLANTAGO LANCEOLATA, *Linn.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Hebrides, ——— ?

Estimate of provinces 18. Estimate of counties 82.

Latitude 50—61. British type of distribution.

A. A. regions. Inferagrarian—Inferarctic zones.

Descends to the coast level, in the Peninsula.

Ascends to 700 yards, in East Highlands.

Range of mean annual temperature 52—39.

Native. Pascual, &c. Equally abundant with P. major, or even more so. Perhaps this may be the species intended under name of P. media in the Orkney list.

PLANTAGO ARGENTEA, *Lam. (?)*

Hibernian. Some few years ago I saw a specimen in the hands of Sir William Hooker, which had been sent to him from Ireland by Mr. Andrews, and which apparently corresponded with the continental examples of P. argentea in the herbarium of Sir William.

904. PLANTAGO MARITIMA, *Linn.*

Area general ?
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Shetland, Hebrides.
Estimate of provinces 18. Estimate of counties 60.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 450 yards, in the East Highlands.
Range of mean annual temperature 52—42.
Native. Littoral, &c. Like some other maritime plants, this species occurs inland occasionally, especially in the mountain valleys, or by the Highland lakes. No authority for its occurrence in the province of Trent.

905. PLANTAGO CORONOPUS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 80.

Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—45.
Native. Glareal, Littoral. All around the coasts of Britain; and frequent on dry gravelly and sandy commons in the inland counties of England. As we advance northward, it appears to become more particularly a plant of the sea coast.

† PLANTAGO PSYLLIUM, *Linn.*

Sarnian? "I found Plantago Psyllium in a light sandy soil, St. Aubin's Bay, Jersey, in August last. It was not growing in or near cultivated ground. I found only one plant of it, and I am satisfied it was truly wild." (Harriett Frances Evans, in Gard. Chron. Dec. 30, 1848). The occurrence of a solitary plant cannot warrant the addition of this species to the list of Sarnian plants, unless simply as an accidental waif.

906. LITTORELLA LACUSTRIS, *Linn.*

Area general.
South limit in Cornwall, Dorset, Sussex, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 75.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 yards, or upwards, in Lake province.

Range of mean annual temperature 52—44.

Native. Lacustral. This was admitted among the "rarer plants" of England and Wales by the authors of the original Botanist's Guide; and it also came under the prescribed test of rarity adopted for the New Guide, with reference to Britain in general. Nevertheless, it appears to be a very widely, and almost generally distributed species, when the area and census are taken by provinces and counties, although absent from several of the published Floras. Probably enough, its usually submerged situation of growth, with its small size, may cause it to be frequently overlooked. In some canals and ponds in Surrey it is so abundant as to form a subaqueous pasture.

907. AMARANTHUS BLITUM, *Linn.*

Area (* 2 3 4 * * * * * * 11).

Alien. Found occasionally about towns and on the coast; but so uncertain in its appearance as scarcely to demand place in the lists of foreign species partially established in Britain.

AMARANTHUS RETROFLEXUS, *Linn.*

Area (3).

Alien. Mr. Ansell brought to me a specimen of Amaranthus retroflexus, found on waste ground at Hertford; and I received one of the same species from Sawbridgeworth last autumn. (Rev. W. H. Coleman, in letter of Sept. 14, 1846).

908. CHENOPODIUM OLIDUM, *Curt.*

Area 1 2 3 4 * * * 8 9 10 11 * * 14.
South limit in Devon, Isle of Wight, Kent.
North limit in Edinburgh, Durham, York, Lancaster.
Estimate of provinces 9. Estimate of counties 30.
Latitude 50—56. English (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—48.

Native. Viatical. Apparently a rare plant in the western provinces, and thus approximating to the Germanic type in its area and distribution. Recorded from the coasts of Devon and Lancaster, as also from the neighbourhood of Bath, with upwards of twenty other more easterly counties. Perhaps the locality of Lytham, in Lancashire, reported by Mr. N. Buckley, if taken in connexion with a few localities in the province of the Peninsula, may be deemed to unite this species with those of the English, rather than with those of the Germanic type of distribution.

909. CHENOPODIUM POLYSPERMUM, *Linn.*

Area 1 2 3 4 5 6 7 8 * [10] (11) * * * [15].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Notts, Derby, Anglesea.
Estimate of provinces 8. Estimate of counties 30.
Latitude 50—54. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.

Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—48.

Native. Viatical, Agrestal. Included by G. Don among the plants of Forfarshire; but I am not aware of any other authority for the existence of this species in Scotland. Has occurred on ballast-hills in the province of Tyne. Enumerated by Baines in the Flora of Yorkshire; but Mr. Moore has intimated that this was an error. Found in Derbyshire and Nottinghamshire, according to Dr. Howitt.

910. CHENOPODIUM URBICUM, *Linn.*
910, b. CHENOPODIUM INTERMEDIUM, *M. K.*

Area 1 2 3 4 5 * [7] * 9 10 11 * * 14 [15].
South limit in Somerset, Dorset, Isle of Wight, Kent.
North limit in Edinburgh, Berwick, Chester.
Estimate of provinces 9. Estimate of counties 30.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in Peninsula or Channel.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Viatical. I have not seen any Scottish specimens of this species, but it is recognized as a plant of the Edinburgh circle by the Society's Catalogue. In the New Botanist's Guide it was enumerated as a species found near Aberdeen, on the authority of a catalogue checked for that neighbourhood by Dr. Dickie; but being omitted from the Flora Abredonensis, afterwards published by the same botanist, there was probably some error in its former enumeration among the plants of Aberdeen.

911. CHENOPODIUM RUBRUM, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Aberdeen, Edinburgh, Lanark.
Estimate of provinces 15. Estimate of counties 60.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Viatical. Said to be frequent about Glasgow, which may indicate its occurrence on the Highland side of the Firth of Clyde. Not frequent about Aberdeen. Rare near the Firth of Forth, according to the Edinburgh Society's Catalogue. Should the county estimate be taken at 60 or at 50?

911*. CHENOPODIUM BOTRYOIDES, *Sm.*

Area 1 2 3 4 * * [7] * * * (11).
South limit in Cornwall, Hants? Sussex, Kent.
North limit in Norfolk. (Northumberland?)
Estimate of provinces 4. Estimate of counties 6.
Latitude 50—53. English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to 50 yards, less or more, in England.
Range of mean annual temperature 52—49.

Native. Littoral, Viatical. Considerable uncertainty is felt respecting the true distribution of this plant, as well as

respecting its claim to be held a true species. It is reported from the counties of Cornwall, Dorset or Hants (16—30 miles from Poole), Sussex, Kent, Essex, Suffolk, Norfolk, Caernarvon, Durham, and Northumberland. To the province of Tyne the species may have been introduced in ballast. That of North Wales will require verification. The Cornish specimens appear to me eyes to be only a form of C. rubrum; but as other botanists pronounce them C. botryoides, that county and the Peninsula are reckoned in the census and area. Excluding Cornwall, the distribution would be Germanic rather than English.

912. CHENOPODIUM MURALE, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 [13 14 15].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Northumberland, Isle of Man.
Estimate of provinces 12. Estimate of counties 40.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—48.

Native. Viatical. The recorded localities in Scotland require verification. On the faith of G. Don's list, this species occurs in Forfarshire. It is likewise included in the Floras of Glasgow and Berwick-on-Tweed; but without any exact station being mentioned in the former, while in the latter it is reported only on Holy Island, which is not strictly in Scotland. There appears to be no authority for the species in North Wales, except that of the Faunula Grustensis, which I hesitate to receive while it thus stands alone.

913. CHENOPODIUM HYBRIDUM, *Linn.*

Area 1 2 3 4 5 * * * * * (11) * * [14].
South limit in Somerset, Dorset, Kent.
North limit in Norfolk, Northampton, Worcester.
Estimate of provinces 5. Estimate of counties 15.
Latitude 50—53. English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Thames or Channel.
Ascends to 50 or 100 yards, in England.
Range of mean annual temperature 50—48.

Native. Viatical, Agrestal. A scarce plant; for the occurrence of which in the province of the Peninsula there seems to be no better authority than that of a Mr. Jelly, deceased, quoted in the Flora Bathoniensis. Recognized as a very rare indigenous species of the Forth circuit, in the Catalogue published for the Botanical Society; but this habitat is so far northward of all its other alleged localities, excepting those of the ballast-hills in the province of Tyne, that I hesitate to receive the record without some special confirmation.

914. CHENOPODIUM ALBUM, *Linn.*
914,b. CHENOPODIUM VIRIDE, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Hebrides, Sutherland.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 150 yards, in East Highlands.

Range of mean annual temperature 52—45.

Native. Agrestal, Viatical. The only really common species of its genus in Britain. Here, as in some other instances, a sort of contradiction is implied in the distribution shown by the formula; the present species being estimated to occur in 82, that is, in all the counties, and yet the north limit not being stated to include the Orkney Isles, which are more northward than Sutherland. The explanation is shortly thus: the number of counties is set down on an "Estimate," or a guess according to probability; whereas the stated "North limit" shows the most northerly counties or isles in which the species has been actually ascertained or reported to occur on admissible authority.

915. CHENOPODIUM FICIFOLIUM, *Sm.*

Area * 2 3 4 5 * * 8 * 10 11.

South limit in Dorset, Hants, Sussex, Kent.

North limit in Northumberland, Durham, York.

Estimate of provinces 8. Estimate of counties 15.

Latitude 50—56. Germanic type of distribution.

Agrarian region. Inferagrarian—Midagrarian zones.

Descends to the coast level, in the Channel.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 51—47.

Native. Agrestal, Viatical. A scarce species, though likely rendered more scarce in appearance through being overlooked as a form of C. album, which it much resembles. In addition to the counties above mentioned, it has been recorded in Surrey, Middlesex, Norfolk, Cambridge, Salop and Leicester; but its actual stations are uncertain, and some of them have proved only temporary.

916. CHENOPODIUM GLAUCUM, *Linn.*

Area * 2 3 * * 6 * * * * 11.
South limit in Dorset? Isle of Wight, Sussex.
North limit in Northumberland, Durham, Glamorgan.
Estimate of provinces 4. Estimate of counties 8.
Latitude 50—56. English? type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in Thames or Channel.
Ascends to 50 or 100 yards, in England.
Range of mean annual temperature 50—48.
Native. Viatical. Uncertain and fugacious in its localities; but it is stated to have occurred in Dorset (Pulteney, in B. G.); Isle of Wight (Dr. Bromfield); Sussex (Rev. G. E. Smith); Surrey (H. C. Watson); Middlesex (Mr. Pamplin); Glamorgan (Mr. Gutch); Durham (Mr. Ward); Northumberland (Flora N. D.).

917. CHENOPODIUM BONUS HENRICUS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Ross, Moray, Dumbarton.
Estimate of provinces 17. Estimate of counties 70.
Latitude 50—58. British (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.
Native? Viatical. Formerly cultivated as a pot-herb; and many of its stations may consequently have originated

from gardens. Perhaps it would better be referred to the English type of distribution, and be treated as a species not indigenous beyond the Grampians, if native anywhere in the Highland provinces.

918. ATRIPLEX PORTULACOIDES, *Linn.*

Area 1 2 3 4 * 6 7 8 9 10 11 * 13 [14] * 16.
South limit in Devon, Isle of Wight, Kent.
North limit in Dumbarton? Wigton, Northumberland.
Estimate of provinces 12. Estimate of counties 25.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends, at the coast level, to W. Lowlands or Highlands.
Range of mean annual temperature 52—48.

Native. Littoral. Very rare on the coasts of Scotland. Has been recorded as growing at Leith, near Edinburgh; but it is not recognized as a plant of the Forth, in the Catalogue by the Botanical Society of Edinburgh. The coast of the Clyde, at Helensburgh, should be verified afresh. I possess a specimen from Wigton, by favour of Professor Balfour.

919. ATRIPLEX PEDUNCULATA, *Linn.*

Area * * 3 4 * [6] * 8 * * [11].
South limit in Kent, Suffolk, Norfolk.
North limit in Lincoln, Cambridge.
Estimate of provinces 3. Estimate of counties 5.
Latitude 50—54. Germanic type of distribution.
Agrarian region. Inferagrarian zone.

Descends to the coast level, in Thames province.

Ascends, at the coast level, to Trent province.

Range of mean annual temperature 51—49.

Native. Littoral. To the five counties mentioned above I am unprepared to add any others, as recorded for this local species, excepting those of Caermarthen and Durham, where it has occurred on ballast formerly, and has again disappeared.

ATRIPLEX NITENS, *Reb.*
ATRIPLEX HORTENSIS, *Linn.*

Area (2).

Alien. To the first of these two species Mr. Babington has referred a plant found by Dr. Bromfield on the coast of the Isle of Wight, and which was originally published as A. hortensis. Examples of the latter species may occasionally be seen on rubbish heaps and by road-sides, as chance stragglers from gardens. I am not prepared to say confidently to which species the plant of Dr. Bromfield ought to be referred, as I have yet seen only two leaves and two or three detached calyces. In their outline, these leaves resembled those on dried specimens of A. hortensis, more than they resembled the leaves of A. nitens in my own herbarium; but the calyces of the fruit resembled those of A. nitens. If the two species are really distinct, that of the Isle of Wight would seem to be A. nitens by the character of the under surface of the leaves.

920. ATRIPLEX LACINIATA, *Linn.*

Area 1 2 3 4 * * 7 8 9 10 11 12 13 14 15 16 17 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Sutherland, Ross, Argyle.
Estimate of provinces 16. Estimate of counties 40.
Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends, at the coast level, to the North Isles.
Range of mean annual temperature 52—46.

Native. Littoral. There is reason to believe that many localities are on record for this species, which more properly belong to another, called by Mr. Babington A. rosea, but which is stated by Fries not to be the true A. rosea of Linnæus, but the A. crassifolia of C. A. Meyer. For the present, I am compelled to fill in the formula of distribution above in accordance with the reported localities for so-called "laciniata," not having the data necessary for sifting out the erroneous from the correct records.

921. ATRIPLEX ROSEA ("*Linn.*"), *Bab. Man.*
† ATRIPLEX GLABRIUSCULA, *Edmondst.*

Area 1 2 3 * 5 6 * * 9 * 11 * 13 14 15 16 * 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Hebrides, ——— ?
Estimate of provinces 17. Estimate of counties 50.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.

Ascends, at the coast level, to the North Isles.

Range of mean annual temperature 52—45.

Native. Littoral. This plant was long overlooked as a distinct species by the botanists of England, being referred either to A. laciniata or to A. patula; more frequently, perhaps, to the former. On this account its distribution cannot be fully shown in the formula above; but from what has been already ascertained, there seems good reason to anticipate that most of the blanks in the line of Area will eventually require to be filled by the proper Nos. Atriplex "glabriuscula" is described in the Flora of Shetland, by Edmondston, who himself expresses a doubt of its real distinctness from A. rosea of Babington. See the remarks on the confusion between the present species and A. laciniata, under the head of the latter.

922. ATRIPLEX PATULA, *Linn.*
&c., &c.

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Orkney, Sutherland.

Estimate of provinces 18. Estimate of counties 82.

Latitude 50—61. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 52—45.

Native. Viatical. Under this single name and formula I am at present compelled to include the various forms which have been figured and described by Mr. C. C. Babington, in the 'Transactions of the Botanical Society of Edinburgh,' under four different names, and as so many dis-

tinct species. Apparently, the name of A. patula has been used by the authors of local lists and floras indiscriminately for any or all of those alleged species to which Mr. Babington applies the names of prostrata, patula, deltoidea, and microsperma. I am myself quite unable to name the specimens in my own herbarium according to the figures and descriptions of Mr. Babington's paper in the Transactions referred to. And on requesting Mr. Babington to tell me his specific name for a common Atriplex of my own neighbourhood, in Surrey, he was puzzled by it, and declined to do so. Under these circumstances, it would be a mere pretence of science to attempt to give the distribution of the several supposed species apart from each other. Indeed, it would not be very difficult to make four dozens of species on paper, instead of four only, by going to work in Mr. Babington's method; that is to say, by selecting two or three leaves and two or three calyces from different plants, to be figured on paper and contrasted against each other. I could make contrasts on paper, between leaves and calyces taken from one single plant, quite as strong as are some of those put forth by the botanist mentioned, as specific distinctions or differences. Still, I am much inclined to believe, with Mr. Babington, that the name of A. patula, as here applied, does include two or three different species, although I am not certain that one of them is equally distinct also from the A. erecta of Hudson.

922, b. ATRIPLEX ANGUSTIFOLIA, *Sm.*

Area general?
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Hebrides, ——— ?
Estimate of provinces 18. Estimate of counties 80.

Latitude 50—61. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 52—45.

Native. Viatical, Agrestal. I am not prepared to adduce any authority for this species or quasi-species in the provinces of the Lakes or North Highlands, both of which are notwithstanding included in the estimated census, and the provincial area is set down interrogatively as general. The plant itself is one very likely to be disregarded by a passing tourist; and our lists of species for those two provinces are incomplete, and derived almost entirely from the observations of occasional visitors; while the presumption created by the distribution of the plant through all the other provinces is, that it may be found also in those two which are at present the seeming exceptions.

923. ATRIPLEX ERECTA, *Huds.*

Area 1 2 3 * 5 6 * 8 * 10 11 * 13 14 15 16 * 18.

South limit in Dorset, Kent, ——— ?

North limit in Hebrides, ——— ?

Estimate of provinces 18. Estimate of counties 70.

Latitude 50—58. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 51—46.

Native. Agrestal, Viatical. An alleged species very little understood by English botanists; the vacancies for which, as above shown in the provincial area, will probably be filled up with increasing knowledge about its localities.

It is doubtless often called A. patula by local botanists, and disregarded in consequence of getting a common name. Since the remarks under "A. patula" were written, I have seen the recent monograph on Chenopodiaceæ, by Moquin, in Part 13 of Decandolle's Prodromus. That high authority for this difficult family, differing widely from Mr. Babington, unites the angustifolia and erecta of English botanists with A. patula of Linnæus; placing the deltoidea and microsperma of Babington's paper, and apparently Babington's prostrata also, as varieties of the Linnean A. hastata. It seems very likely that our common inland species are truly the patula and hastata of Linnæus, carved into other subordinate species on too partial views and too limited investigation of these proteiform plants, which obviously require a long and particular study before they can be clearly understood.

924. ATRIPLEX LITTORALIS, *Linn.*
924, b. ATRIPLEX MARINA, *Linn.*

Area * 2 3 4 * 6 7 8 9 10 11 * * 14 15.
South limit in Dorset, Isle of Wight, Kent.
North limit in Aberdeen, Fife, Lancaster.
Estimate of provinces 12. Estimate of counties 30.
Latitude 50—58. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Channel.
Ascends, at the coast level, to East Highlands.
Range of mean annual temperature 51—48.

Native. Littoral. I do not find any record of this species being known in the Peninsula, where it would otherwise have seemed likely enough to occur; and the same is the case with the provinces of the Lakes and West Low-

lands. I have not had the opportunity of proving (or of sufficiently examining into) the differences alleged to exist between the calyces of A. littoralis and A. marina, while those between their leaves appear very unsatisfactory; and various botanical authorities have considered them only forms of one single species. A. marina is reported from the provinces of the Channel, Thames, and Tyne.

925. BETA MARITIMA, *Linn.*

Area 1 2 3 4 5 6 7 * * 10 11 12 * 14 15 16 * 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, ——— ?
Estimate of provinces 15. Estimate of counties 30.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends, at the coast level, to the North Isles.
Range of mean annual temperature 52—45.
Native. Littoral. Being already known in 29 counties, the estimate of 30 may be rather too low for this species; but that of 40 might be as much too high. See the remark on the county estimates between 30 and 70 for maritime plants, under head of "927. Schoberia maritima."

926. SALSOLA KALI, *Linn.*

Area 1 2 3 4 * 6 7 8 9 10 11 12 13 14 15 16.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Aberdeen, Argyle.
Estimate of provinces 15. Estimate of counties 40.
Latitude 50—58. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends, at the coast level, to the East Highlands.
Range of mean annual temperature 52—47.

Native. Littoral. The northern limit of this species for Britain being at the sea-level in Moray, it can only just be deemed a plant of the superagrarian zone; as well as barely approaching to that general distribution around the coast which places it within the British type.

927. SCHOBERIA MARITIMA, *Mey.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Western Ross, Moray.
Estimate of provinces 18. Estimate of counties 50.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends, at the coast level, to the North Isles.
Range of mean annual temperature 52—45.

Native. Littoral. Possibly the comital estimate of 50 may be too high for a species which has not yet been ascertained in quite 40 counties; but so many of the other maritime counties appear very probable habitats, that I hesitate to keep down the estimate so low as 40. The steps of the county estimate, being taken at 10 counties each, between 30 and 70 in the scale, are found rather too wide for the maritime plants, where the guess or estimate might probably often be made within five of the reality, even from our present incomplete data.

928. SCHOBERIA FRUTICOSA, *Mey.*

Area 1 2 3 4 * 6 * * * * (11).
South limit in Cornwall? Devon? Dorset, Essex.
North limit in Norfolk, Suffolk, Glamorgan.
Estimate of provinces 5. Estimate of counties 8.
Latitude 50—53. English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Peninsula or Channel.
Ascends, at the coast level, to province of Ouse.
Range of mean annual temperature 52—49.

Native. Littoral. A local plant, the continued existence of which on the coasts of the Peninsula it would be desirable to have verified. In addition to the counties above mentioned, it is said to have been found on the islet of Steep Holms, in the estuary of the Severn; also, has occurred on the ballast-hills of the Tyne province, doubtless introduced thither with the ballast.

929. SALICORNIA HERBACEA, *Linn.*
929, b. SALICORNIA PROCUMBENS, *Sm.*

Area general?
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Hebrides, Ross.
Estimate of provinces 18. Estimate of counties 50.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends, at the coast level, to the North Isles.
Range of mean annual temperature 52—45.

Native. Littoral. It is necessary to attach the sign of uncertainty ("?") to the general area indicated for this species, because I am unable to cite any positive authority for its existence on the coasts of the Lake province; while I have, however, an indistinct recollection of seeing it myself in the vicinity of Alonby or Whitehaven.

930. SALICORNIA RADICANS, *Sm.*
SALICORNIA FRUTICOSA, *Sm.*

Area 1 2 3 4 * [6 * * * * * * * * 15].
South limit in Dorset, Isle of Wight, Sussex, Kent.
North limit in Norfolk, Somerset?
Estimate of provinces 4. Estimate of counties 6.
Latitude 50—54. English (?) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Channel.
Ascends, at the coast level, to the Ouse.
Range of mean annual temperature 51—49.

Native. Littoral. The most certain localities for this species range along the southern and eastern coasts of England, from Dorset to Norfolk. Thus far it might be better referred to the Germanic than to the English type of distribution. But Mr. Sole is recorded to have found it on the coast of Somerset, and Dr. Turton is quoted for its occurrence on that of Glamorgan. In case of either of these two western localities being correct, it might be considered to turn the scale to the English type. But that of Glamorgan is now supposed to have been an error; and that of Somerset may be so likewise. In addition, the coast near Montrose, Forfarshire, has been reported as a locality for the present species, on authority of D. Don, in Hooker's Flora Scotica, which was very probably erroneous also.

931. Polygonum Bistorta, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 (17 18).
South limit in Devon, Dorset, Sussex, Kent.
North limit in Isle of Skye, Aberdeen.
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in Peninsula or Channel.
Ascends to 200 yards, more or less, in Humber.
Range of mean annual temperature 50—46.

Native. Pratal. Probably introduced to several of its present localities, especially the more northern; so that there is difficulty or uncertainty in an attempt to show the true geographical distribution of the species. Dr. Neill found it in Orkney, but within or on the site of an old garden. The Rev. G. Gordon marks it as a plant of Ross, and also includes it in his Flora of Moray; but expressly indicates it to have been certainly introduced to Moray. Perhaps the type of distribution may be deemed British approximating to Scottish; the chief prevalence of the species apparently being in the northern provinces of England. And yet it is not at all a characteristic plant in the flora of boreal Europe, being quite local in Scandinavia. In the southern provinces of England it would seem to be of rare or decidedly local occurrence; and though I have been in various parts of the Peninsula, Channel, and Thames provinces, I have never met with this species there. Said to grow near Winch Bridge, Teesdale, on the Yorkshire side of the river; but I do not know whether the altitude of this locality exceeds 200 yards.

932. POLYGONUM VIVIPARUM, *Linn.*

Area * * * * [5] * 7 [8] * 10 11 12 * * 15 16 17 18.
South limit in Caernarvon, York.
North limit in Shetland, Sutherland,
Estimate of provinces 8. Estimate of counties 20.
Latitude 53—61. Highland type of distribution.
A. A. regions. Superagrarian—Superarctic zones.
Descends to the coast level, in East Highlands.
Ascends to 1300 yards, in the same province.
Range of mean annual temperature 47—34.

Native. Pascual, Ericetal. Frequent in the Highland provinces, but remains unreported from the Isles of Orkney and Hebrides. In England it occurs in Westmoreland, Durham, York and Caernarvon; also reported to have been found in Lincoln (Martyn, in B. G.) and Worcester (Mr. Lees, in Hastings' Illustrations), though these are doubtless to be considered erroneous records. Occurs at a very trifling elevation in Fifeshire; and as it grows one mile south from the city of Aberdeen, it is there probably at or near the coast level; as is the case also in the neighbourhood of Loch Errboll, in Sutherland.

933. POLYGONUM AMPHIBIUM, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 52—45.

Native. Lacustral. I do not remember ever meeting with this species above 100 yards of elevation, even in England; and yet its northward range into Shetland, Lapland and Finland, might lead us to expect its occurrence at 300 or 400 yards in England, if not also in the Highland valleys of 200 or 300 yards of elevation.

934. POLYGONUM PERSICARIA, *Linn.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Orkney, Hebrides.

Estimate of provinces 18. Estimate of counties 82.

Latitude 50—61. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 450 yards, in East Highlands (Dickie).

Range of mean annual temperature 52—42.

Native. Agrestal, Inundatal. I have not seen this higher than 300 yards in the Highlands, and therefore quote Dr. Dickie for the greater elevation; as is also done in several other instances, where, without the information borrowed from that able observer of Nature, I might have given the altitudinal ranges of the plants on too restricted a scale. It is much to be desired that Dr. Dickie would continue his examination of the altitudinal ranges of plants while his residence remains so conveniently near to the line of the Grampian Mountains.

935. POLYGONUM LAPATHIFOLIUM, *Linn.*
935, b. POLYGONUM NODOSUM, *Pers.*
935, c. POLYGONUM LAXUM, *E. B. S.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Aberdeen, Argyle.
Estimate of provinces 16. Estimate of counties 75.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Agrestal, Inundatal, &c. This species may have been seen by myself in the North Highland province; but the recollection is not sufficiently exact to warrant the addition of that province (17) to the area, or the county of Ross to the north limit of the species. When growing in water it often becomes the P. nodosum. As for the puzzling P. laxum, while it has little the character of a distinct species, there is still doubt whether it should be received as a form of P. lapathifolium: it is said to have been found in Sussex, Middlesex, Essex, Hereford, and Monmouth.

636. POLYGONUM MITE, *Schr.*

Area * * 3 4 * 6 * * * 10.
South limit in Surrey, —— ?
North limit in York, —— ?
Estimate of provinces — ? Estimate of counties — ?
Latitude 51—54. English type of distribution.

Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in Thames province.
Ascends to 50 or 100 yards, in England.
Range of mean annual temperature 49—48.

Native. Inundatal, Paludal. A doubtful species, with little to distinguish it from P. Persicaria, except its more slender spikes. The true distribution cannot be shown at present; the species, if such it be, being yet unfamiliar to English botanists, and not improbably passed by as a small variety of P. Persicaria, or as a large one of P. minus.

937. POLYGONUM HYDROPIPER, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 * 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, —— ?
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in Scotland.
Range of mean annual temperature 52—45.

Native. Inundatal, Paludal. This common English species apparently becomes quite infrequent in the Highland provinces; nor am I prepared to adduce a single authority for its occurrence in the North Highlands, probable as that may be. It is found, though rarely, in Moray; I saw it on the shore of Loch Eil, at the west end of the Caledonian Canal; and Mr. Brand observed it in an intermediate locality, by the Lake at Fort Augustus. It is enumerated by Dr. Gillies as an Orkney plant, on authority of Lowe; and Edmondston says that it is frequent in Shetland. It is stated also to reach Faroe; and is distributed

through much of Scandinavia, although failing to attain Lapland. On the whole, therefore, there seems fair grounds for expecting a provincial and almost comital generality in Britain.

938. POLYGONUM MINUS, *Huds.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 * [15].
South limit in Dorset, Isle of Wight, Sussex, Kent.
North limit in Dumfries, Durham.
Estimate of provinces 12. Estimate of counties 30.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—48.

Native. Inundatal. Almost restricted to England, and not at all common there; although its inconspicuous appearance may cause it to be overlooked, and thus make it seem less frequent than the reality. Don said that it was to be found about Forfar; but neither Mr. Gardiner nor any other Scottish botanist has been able to verify the alleged habitat. Professor Balfour collected it in Dumfries; so that it does grow in Scotland, however locally. Not yet discovered in Cornwall or Devon. Dr. Southby found it in Somerset, and is, I believe, the only authority for this species in the province of the Peninsula.

939. POLYGONUM AVICULARE, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 450 yards, in the East Highlands.
Range of mean annual temperature 52—42.

Native. Agrestal, Glareal, &c. A very common species in Britain, and varying greatly in its different situations of growth.

940* POLYGONUM RAII, *Bab.*

Area 1 2 * 4 * 6 7 * * * * 12 13 * 15 16 * 18.
South limit in Cornwall, Isle of Wight, —— ?
North limit in Shetland, —— ?
Estimate of provinces — ? Estimate of counties — ?
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends, at the coast level, to the North Isles.
Range of mean annual temperature 52—45.

Native. Littoral. The distribution of this species is yet imperfectly ascertained, the plant having only of late years attracted the attention of modern British botanists, as a species distinct from P. aviculare. Very few of its localities, hitherto recorded, are situate on the eastern coast of Britain; namely, those in Forfarshire (Flo. Forf.) and Norfolk (Mr. J. E. Moxon), both of which may be deemed to require confirmation, although not so unlikely as to warrant their rejection here. It has also been reported from Hants, Dorset, Devon, Glamorgan, Pembroke, Merioneth, Caernarvon, Anglesea, Isle of Man, Wigton,

Ayr, and Argyle. My own attention was first drawn to this plant, as something distinct from P. aviculare, so long ago as the year 1831; but being then a very young botanist, I thought it sufficient to send specimens of the plant to Sir W. J. Hooker, along with other novelties from the same county of Cornwall;—all of which were entered either as varieties, or passed by unnoticed, in the next edition of his British Flora. Subsequently, when I began to examine dubious plants myself, instead of appealing to established authorities, my difficulty was to distinguish satisfactorily between P. Raii and P. maritimum, rather than between P. Raii and P. aviculare. But cultivation of them for a few years, with the examination of specimens from several different localities, leaves me satisfied that P. Raii is hereditarily distinct from both the others. See Phytologist ii. 615.

940. POLYGONUM MARITIMUM, *Linn.*

Area * 2.
South limit in Hants
North limit in the same county.
Estimate of provinces 1. Estimate of counties 1.
Latitude 50—51. Local (Engl.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Channel.
Ascends:—at the coast level only.
Range of mean annual temperature 51.

Native. Littoral. First found by Mr. Borrer, on the sandy shore between Christchurch Head and Muddiford, in the west of Hants. Several other habitats have been reported for so-called "P. maritimum," in England and Scotland, as well as one or more in Ireland; but probably

they all belong to P. Raii, and it has not appeared worth while to indicate them for P. maritimum in the formula above. Still, the ascertained existence of this species in one spot on our own coast, as well as in the Channel Islands, may be considered to suggest a probability of its occurrence elsewhere on the southern coast of England; although it is too easily injured by frost to become well established in our island, except in very favourable situations.

941. POLYGONUM CONVOLVULUS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Hebrides, Sutherland.
Estimate of provinces 18. Estimate of counties 81.
Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 yards, in the East Highlands.
Range of mean annual temperature 52—43.
Native. Agrestal. Not enumerated among the Shetland plants by Edmondston; and likely enough only an agricultural introduction at the elevation indicated for the upper limit in the Highlands.

942. POLYGONUM DUMETORUM, *Linn.*

Area 1 2 3.
South limit in Somerset, Sussex, ——— ?
North limit in Herts, Surrey, ——— ?
Estimate of provinces — ? Estimate of counties — ?
Latitude 50—52. English type of distribution.

Agrarian region. Inferagrarian zone.

Descends to the coast level, or nearly so, in Channel.

Ascends to 50 or 100 yards, in Thames province.

Range of mean annual temperature 50—49.

Native. Sylvestral, Septal. Probably several other counties may eventually be added to the four above mentioned, in which this species has been only recently ascertained to occur. The late Mr. David Don informed me that the alleged habitat by the Great Western Railway, near Keynsham, in Somerset, was erroneous, the winged variety of P. Convolvulus having there been mistaken for P. dumetorum. I have seen that variety in great luxuriance on the fresh-made embankments of railways, and also in damp and shady situations; but I do not feel warranted in discarding the Somerset locality for P. dumetorum, at least without some more certain evidence of error on the part of Mr. C. C. Babington and Mr. J. A. Hankey, who are the witnesses for its accuracy.

POLYGONUM FAGOPYRUM, *Linn.*

Area (1 &c.)

Alien. Scarcely meriting notice among British plants, since it is only kept here by repeated sowings as food for game. It appears to be no nearer naturalization than the cereals and legumes which are sown by agriculturalists year after year, without acquiring any permanent habitats. I do not understand upon what principle botanists proceed, who include this among plants "naturalized" in Britain, and still exclude barley and beans from the same category.

943. RUMEX HYDROLAPATHUM, *Huds.*

Area 1 2 3 4 5 6 7 8 9 10 11 * * * [15] 16.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Argyle (Islay), Durham.
Estimate of provinces 13. Estimate of counties 40.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards in England.
Range of mean annual temperature 52—48.

Native. Paludal. In most of the English counties, but very scarce in Scotland. Possibly the estimate of 50 might be as near the truth as that of 40 counties. Localities have been recorded in Aberdeen and Perth, on authority which leaves it probable that R. aquaticus was the species really observed. Mr. Gardiner (Flo. Forf.) thinks this species introduced to the Links, near Barrie, Forfarshire; but was not some other species, as R. alpinus, there mistaken for the present one? Its occurrence in Islay is verified by a specimen in my herbarium, collected in that isle by Professor Balfour, by whose botanical excursions in the west of Scotland this work has been very materially assisted. I made a memorandum, but unluckily omitted and have forgotten the authority, to the effect that Rumex maximus of Schreber has been found at Lewes, in Sussex.

944*. RUMEX AQUATICUS, *Linn.*

Area [1 * * 4 5] * * * * 10 11 12 13 14 15 16 17 18.
South limit in York, —— ?
North limit in Shetland, Hebrides, —— ?
Estimate of provinces 10. Estimate of counties 40.
Latitude 54—61. Scottish type of distribution.
Agrarian region. Midagrarian—Superagrarian zones.
Descends to the coast level, or nearly so, in Lowlands.
Ascends to 500 yards, in East Highlands.
Range of mean annual temperature 47—42.

Native. Pratal, Inundatal, &c. Considerable confusion has occurred between this plant and R. Hydrolapathum, on the one side, and between this and R. crispus, on the other side; in the former case, through misapplications of name; in the latter, through the close resemblance of the two plants, which barely admit of specific distinction by printed characters. R. aquaticus appears to be a frequent plant in damp ground in the mountain valleys, and perhaps may rise to the inferarctic zone.

944. RUMEX CRISPUS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 150 yards, in the East Highlands.

Range of mean annual temperature 52—45.

Native. Pratal, Viatical. Perhaps this species may be found considerably higher than is indicated in the formula above. In my earlier notes on the altitudes of localities I did not make any distinction between R. crispus and R. aquaticus; and more recent visits to the Highland counties, made too early in the season for seeing R. crispus advanced towards maturity, have not enabled me to trace the present species to its true upper limits.

945. RUMEX PRATENSIS, *M. & K.*

Area 1 2 3 4 5 6 7 8 * 10.

South limit in Cornwall, Isle of Wight, Sussex.

North limit in York, —— ?

Estimate of provinces 10. Estimate of counties — ?

Latitude 50—54. English type of distribution.

Agrarian region. Inferagrarian—Midagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 52—48.

Native. Pratal, Paludal. A dubious species, recently distinguished as such, and hence not familiar to the eyes of many botanists who have published lists and habitats. My notes show localities in fifteen counties, and not unlikely the plant may eventually prove to be much more generally distributed than is at present shown to be the case.

946. RUMEX ALPINUS, *Linn.*

Area (* * * 4 * * * 8 * * 11 12 13 * 15 16).

Alien. Appears to have become established in many

spots in Scotland, as well as in some of the English counties, chiefly the more boreal. Our forefathers would seem to have been fond of cultivating the plant on account of its roots, which were in use for medicinal purposes.

947. RUMEX OBTUSIFOLIUS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Hebrides, Sutherland.
Estimate of provinces 18. Estimate of counties 81.
Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 yards, in East Highlands.
Range of mean annual temperature 52—44.
Native. Pratal, &c. Fails to reach Shetland, according to Edmondston's Flora; but it is enumerated in Lowe's list of Orkney plants.

948. RUMEX SANGUINEUS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Aberdeen, Argyle.
Estimate of provinces 16. Estimate of counties 75.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.
Native. Pratal, Viatical, &c. A common English

species, at least in the south, though it appears to be infrequent in Scotland. Perhaps often confused with R. conglomeratus, from which I formerly doubted its distinctness, until ascertaining that both come up true from seed when sown under similar circumstances. The variety with reddish-purple veins is uncommon; but in other respects this plant deserves its specific name, being more apt to turn generally red towards the autumn than is the R. conglomeratus and other allied species.

948*. RUMEX CONGLOMERATUS, *Mur.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 * * 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney.
Estimate of provinces 17. Estimate of counties 75.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—45.

Native. Inundatal, Viatical. I am induced to give the provincial and comital estimate higher for this species than has been actually ascertained. The three vacancies in the line of "Area" represent the provinces in which our county lists are least complete for the common species. This circumstance, in connexion with the indifferent attention often bestowed upon "docks," may account for the absence of any record of the present species in the provinces of the Lakes or West or North Highlands. It is, however, stated to be common in Shetland and about Edinburgh, frequent about Aberdeen and in Forfarshire, occasional about Glasgow. Omitted from the Flora of Moray.

Said to occur in Faroe, but is local in Scandinavia, according to Fries, being confined to the more southern latitudes.

949. RUMEX PULCHER, *Linn.*

Area 1 2 3 4 5 6 * 8 * * (11 * 13).
South limit in Cornwall, Isle of Wight, Kent.
North limit in Notts, Stafford, Pembroke.
Estimate of provinces 7. Estimate of counties 30.
Latitude 50—54. English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to 100 yards, less or more, in England.
Range of mean annual temperature 52—48.

Native. Viatical. Probably occurs in every county of the four first provinces, and is reported from those of Gloucester, Worcester, Stafford, in the province of Severn, from Caermarthen and Pembroke, in South Wales. Northward from these, we find it in Nottinghamshire, where Dr. Howitt deemed it native; in Durham and Northumberland, but only on the ballast-hills; also in one spot in Lanarkshire, according to Patrick's Flora, which is so far northward from the other certain habitats, that distrust will attach to the nativity of the plant there or to the correctness of the recorded discovery.

950. RUMEX MARITIMUS, *Linn.*
950, b. RUMEX PALUSTRIS, *Sm.*

Area 1 2 3 4 5 6 7 8 9 10 (11) * 13 * 15 * * [18].
South limit in Devon, Dorset, Sussex, Kent.
North limit in Banff? Aberdeen, Dumfries;—or York.

Estimate of provinces 12. Estimate of counties 30.
Latitude 50—55 (58). English type of distribution.
Agrarian region. Inferagrarian — Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 yards, less or more, in England.
Range of mean annual temperature 51—47.

Native. Paludal, Littoral. Several of the localities on record for one or other of these plants, if divided, cannot be satisfactorily assigned to either of them; authors having repeatedly expressed doubts or uncertainty respecting the particular species which was intended by them. Nor do I myself feel prepared to distinguish the two quasi-species in any confident manner. I have never seen a Scottish example of either of the alleged species, and receive the recorded localities with some distrust. In the province of Tyne, it would seem, both have been found, though only on the ballast-hills.

† RUMEX SCUTATUS, *Linn.*

Area (6 * * * 10 * 12 * 14).

Alien. Has become established in the counties of Glamorgan (Dillwyn, &c.); York (Mr. Tatham); Cumberland (H. C. Watson); and Edinburgh (Mr. Brand). But it would seem to be very local in each of these counties, and distant from houses or walls only in Yorkshire, where it is found by Mr. Tatham, at the head of Silverdale. "There were," writes Mr. Tatham, "only four houses in the dale, and the plant was about four hundred yards from the highest, growing along with Galium boreale, Potentilla alpestris, Trollius europæus, Geranium sylvaticum, &c., in the grassy chinks of limestone pavement."

951. RUMEX ACETOSA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Superarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 1350 yards, in West Highlands.
Range of mean annual temperature 52—33.
Native. Pratal, &c. According to my own observations, this species ascends to a much higher elevation on the mountains than its ally and almost namesake the R. Acetosella; while by Dr. Dickie's observations the reverse holds true. I should almost fear that the name had been inadvertently misapplied by one of us.

952. RUMEX ACETOSELLA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 700 yards (or 1200 yards ?), in E. Highlands.
Range of mean annual temperature 52—40 (or 35).
Native. Pascual, Ericetal. I have noted this species as seen at 2140 feet of altitude in the pass between Glen

Shee and Glen Clunie, where Salix herbacea and Sibbaldia procumbens grow on the open moor; so that it may be there deemed just within the midarctic zone. All my other notes indicate a lower altitude. Dr. Dickie assigns it a range upward even to 3559 feet; while to Rumex acetosa he gives only an ascent to 1386 feet.

953. OXYRIA RENIFORMIS, *Hook.*

Area * * * * [5] * 7 * * 10 * 12 * * 15 16 17 18.
South limit in Merioneth, Caernarvon, York.
North limit in Orkney, Hebrides, ——— ?
Estimate of provinces 7. Estimate of counties 20.
Latitude 52—60. Highland type of distribution.
A. A. regions. Superagrarian—Superarctic zones.
Descends to the coast level, in the East Highlands.
Ascends to 1300 yards, in the same province.
Range of mean annual temperature 47—33.

Native. Rupestral. Although the Oxyria descends along the course of the river Dee even to the city of Aberdeen, on the coast, Dr. Dickie thinks that its lowest natural limit, except as carried lower down by water, in that county, is at Ballater, about 900 feet above the sea, and forty-four miles inland. But from the moderate elevation (500 or 600 feet?) to which it descends in Cumberland and Caernarvon, it would seem to be naturally adapted to the coast level, in the West Highlands. I have seen it on a rock by the road-side, between Pitmain and Dalwhinnie, on the northern side of the Grampians, at an altitude supposed to be 800 feet; and it descends to the bed of the stream in Glen Clova, on the southern declivity of the Grampians, probably between 800 and 900 feet of elevation.

954. HIPPOPHAE RHAMNOIDES, *Linn.*

Area * * 3 4 * * * 8 * 10 * * * (14 * 16).
South limit in Kent, Essex, Norfolk.
North limit in York, Lincoln.
Estimate of provinces 4. Estimate of counties 5.
Latitude 51—55. Germanic type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in Thames province.
Ascends, at the coast level, to that of Humber.
Range of mean annual temperature 51—49.

Native. Littoral or Sub-littoral. A very scarce or local shrub, reported from the five counties mentioned above; but only from those of Kent and Norfolk on recent authority. Also occurs by the shore of the Firth of Forth, doubtless planted originally; as, I presume, was likewise the case in Islay and Cantire, where Professor Balfour observed this plant.

955. DAPHNE LAUREOLA, *Linn.*

Area 1 2 3 4 5 * 7 8 9 10 11 * 13 14 (15).
South limit in Devon, Isle of Wight, Kent.
North limit in Fife? Edinburgh, Berwick, Lanark.
Estimate of provinces 12. Estimate of counties 40.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Sylvestral. Plentiful in some places, but an

infrequent shrub with reference to England in general; and quite local in Scotland; where, however, authors seem to regard it as a true native, although most of its stations are suspicious by their proximity to the ornamental grounds about country residences. Mr. George Lawson has recorded it (Phytol. iii. 134) growing in Earl's Hill Wood abundantly; otherwise I had no authority to cite for its existence northward of the Firth of Forth, and still hesitate to consider it indigenous there. The authors of the Edinburgh Society's Catalogue mark it as only a doubtful native of their circle. In the Flora of Berwick it is stated to be quite wild on the banks of the Eye, above Netherbyres, on authority of the Rev. A. Baird.

956. DAPHNE MEZEREUM, *Linn.*

Area (1) 2 3 (4) 5 * * 8 * 10 (11) 12.
South limit in Dorset, Hants, Sussex.
North limit in York, Westmoreland, North Lancashire.
Estimate of provinces 6. Estimate of counties 9.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, or nearly so.
Ascends to 100 yards, less or more, in England.
Range of mean annual temperature 50—48.

Denizen. Sylvestral. My own inclination would be to treat this shrub as an alien, without attempting to fill in the formula in the customary way for native plants. By Hooker it is classed with the introduced species; by Henslow and Babington with the undisputed natives. Mr. Borrer deems it "truly wild" in Sussex; Mr. Pamplin apparently takes the same view of it in Hants; the authors of the Flora Hertfordiensis enter it as an unchallenged

native of Herts; and so on with respect to some other counties and their witnesses. The continental distribution of the species is such as rather to oppose the idea of the shrub being indigenous in Britain.

DAPHNE CNEORUM, *Linn.*

Area [7].

Incognit. Reported to have been found about two miles from Beddegelert, by the road leading to Caernarvon; no doubt erroneously so reported, or else an introduced plant there.

957. THESIUM LINOPHYLLUM, ("*Linn.*") *Aut. Ang.*

Area 1 2 3 4 5.

South limit in Cornwall, Isle of Wight, Sussex.

North limit in Norfolk, Cambridge, Oxford, Gloucester.

Estimate of provinces 5. Estimate of counties 15.

Latitude 50—53. English type of distribution.

Agrarian region. Inferagrarian zone.

Descends to the coast level, in the Peninsula.

Ascends to 100 yards, less or more, in England.

Range of mean annual temperature 51—48.

Native. Pascual. In Babington's Manual of British Botany the name of T. Linophyllum is discarded, and that of T. humifusum (DC.) adopted for the plant of England; two other dubiously British species being added, namely, T. intermedium and T. humile; the latter supposed to have been found by himself "somewhere near Dawlish, in Devonshire, in 1829." Besides the counties mentioned above, T. Linophyllum (or T. humifusum) has been

reported to occur in Somerset, Dorset, Wilts, Hants, Surrey, Berks, Bucks, Herts and Suffolk. The counties thus amount to 16 in the whole, including Devon. The proper estimate may eventually rise to 20, as nearer the exact number than that of 15, which best accords with our present knowledge of the comital distribution of the Thesium.

958. ASARUM EUROPÆUM, *Linn.*

Area * * (3) * * * * * 9 10 (11) 12 * (14).
South limit in York, Lancashire.
North limit in Westmoreland.
Estimate of provinces 3. Estimate of counties 3.
Latitude 53—55. Local (Scottish ?) type of distribution.
Agrarian region. Midagrarian zone.
Descends to —— ? (Lowest altitude trifling).
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature about 48—47.

Denizen. Sylvestral. Not ascertained to be indigenous in this country in a perfectly satisfactory manner, although the presumption seems to be greater in favour of, than opposed to, that view. The strongest testimony appears to be for its nativity in Yorkshire; and Mr. Roberts Leyland, a resident botanist of experience, writes thus from Halifax: "Asarum is plentiful in Broadbottom Wood, near Mytholm-royd, the only situation in which we find it, with the exception of a small quantity in Harper-royd Clough; and I have some doubt of its being truly indigenous in either situation." Besides the three counties above mentioned, those of Berks, Northumberland, Cumberland and Linlithgow have been named. The first and fourth of these require verification; in the second and third, Winch mentions the Asarum as "naturalized."

959. ARISTOLOCHIA CLEMATITIS, *Linn.*

Area (1 * 3 4 5 * * 8).

Alien. Generally allowed to be only an introduced plant in Britain. It has existed many years in some few places near old gardens, chiefly those connected with religious edifices.

960. EMPETRUM NIGRUM, *Linn.*

Area * [2] * * 5 6 7 8 9 10 11 12 13 14 15 16 17 18.

South limit in Monmouth, Warwick, Leicester.

North limit in Orkney, Hebrides, Caithness.

Estimate of provinces 14. Estimate of counties 50.

Latitude 51—60. Scottish type of distribution.

A. A. regions. Midagrarian—Superarctic zones.

Descends to the coast level, in Scotland.

Ascends to 1300 yards, in East Highlands.

Range of mean annual temperature 47—34.

Native. Ericetal. Possibly there may have been a period when the provincial distribution of this little shrub might have been entered as "general," although it is now unknown in the first four provinces, and rare in the fifth. Mr. Borrer has no doubt respecting its former existence in Sussex, where it is now no longer found. I think Sir Walter Trevelyan informed me that it had occurred in Somerset, but I cannot find the memorandum to this effect, and therefore omit the first province in the line of area. For the provinces of Thames and Ouse I have no authority, ancient or otherwise. I am unprepared to state the most southern province in which the Empetrum descends

to the coast level. Its occurrence in Warwickshire, a county of trifling elevation, shows that it will descend quite low in the middle of England; and its former locality in Sussex, I should suppose, may not have exceeded 100 or 150 yards.

961. EUPHORBIA PEPLIS, *Linn.*

Area 1 2 * * * 6.
South limit in Cornwall, Devon, Dorset, Isle of Wight.
North limit in Cardigan, Glamorgan, Somerset.
Estimate of provinces 3. Estimate of counties 7.
Latitude 50—53. Atlantic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends, at the coast level, to South Wales.
Range of mean annual temperature 52—49.

Native. Littoral. A rare plant, which appears to become more scarce than formerly. The only counties in which I find localities recorded, are those named above for the southern and northern limits of the species in England. From the situations in which it grows, on dry and shifting sands of the coast, its particular localities are likely to be uncertain and variable, which may partly explain the unsuccessful search occasionally made for the plant in its reported localities.

962. EUPHORBIA HELIOSCOPIA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Hebrides, Caithness.

Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 yards, in East Highlands.
Range of mean annual temperature 52—43.

Native. Agrestal. This species is not enumerated in the list of Orkney plants; but I have still ventured to give the county estimate at the highest figure, the species being reported "common" in Shetland, and having been observed by myself in various places along the northern coast of Caithness and Sutherland. It ascends to Castletown, Aberdeenshire. Its present upper and northern limits may, indeed, have been created by agricultural operations; but there would be great difficulty in attempting to say how far, or how high, it would have extended itself without that adventitious condition of tillage to assist therein.

963. EUPHORBIA PLATYPHYLLOS, *Linn.*
EUPHORBIA STRICTA, *Eng. Bot.*

Area 1 2 3 4 5 * * * * (10 11).
South limit in Cornwall, Isle of Wight, Kent.
North limit in Cambridge, Northampton, Worcester.
Estimate of provinces 5. Estimate of counties 20.
Latitude 50—53. English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—48.

Colonist. Agrestal. Mr. Peter Inchbald reports (Phytologist iii. 448) this species in Yorkshire, on arable land, to which he considers it introduced with seed-corn. It

was noticed in Yorkshire so long ago as the time of Ray; but would seem not to have become permanently established there. Winch deems it introduced likewise to the only habitat mentioned in the Flora of Northumberland and Durham, which was by a mill. Not unlikely introduced to England at first through agriculture; but it is now so well established in the southern counties, as to have lost the character of an alien. Euphorbia verrucosa of Hudson, not of continental botanists, belongs to this species, in form of E. stricta of Smith.

963*. EUPHORBIA STRICTA, "*Koch*."

Area * * * * 5.
South limit in Monmouth.
North limit in the same county.
Estimate of provinces 1. Estimate of counties 1.
Latitude 51—52. Local (Engl.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to ——— ?
Ascends to ——— ? (Altitude trifling ?)
Range of mean annual temperature, say 49.

Native. Sylvestral. Found "in woods below the Wind Cliff and near Tintern, Monmouthshire;" which, so far as yet ascertained, is the only county that produces this species, apparently quite distinct from the corn-field plant, figured under name of E. stricta in English Botany, 333. It is injudicious to appropriate the name "stricta" to this plant, as the doing so can scarcely fail to induce confusion and error, consequent on applying the same name to two different things.

964. EUPHORBIA HIBERNA, *Linn.*

Area 1 * (3).
South limit in North Devon.
North limit in the same county.
Estimate of provinces 1. Estimate of counties 1.
Latitude 51—52. Local (Atl.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends nearly to the coast level, in the Peninsula.
Ascends to 50 yards, less or more.
Range of mean annual temperature 50—49.

Native. Sylvestral. In the woods about Leemouth or Linton, in Devon; which is the only habitat as yet ascertained for this species in England. I discovered it in that habitat in the year 1833, but finding only the autumnal remains, from which the flowers and fruit had disappeared, I was not able to decide about the species, and mentioned it doubtingly as E. pilosa in the New Botanist's Guide. From the descriptions of other botanists, I suppose it to have been since observed in several different, though adjacent, spots. Has been long known in Ireland. It was formerly reported in Kent, Middlesex, and Herts; but probably E. platyphyllos was thus misnamed in these three counties.

965. EUPHORBIA PILOSA, *Linn.*

Area 1 [2].
South limit in Somerset.
North limit in the same county.
Estimate of provinces 1. Estimate of counties 1.

Latitude 51—52. Local (Engl.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to ——— ?
Ascends to ——— ? (Altitude trifling ?)
Range of mean annual temperature, say 49.

Native. Sylvestral or Septal. "In shady places near Bath, where it was noticed by Lobel before the year 1576." (Bab. Man.). It was first published in the Flora Bathoniensis, under name of E. epithymoides; and a reference may be made to that local Flora, and to the New Botanist's Guide, for particulars. Mr. Forster and Mr. Babington have more lately considered the E. pilosa to be a variety of the Linnean E. palustris. It was also reported from Slinfold, in Sussex, although only as a naturalized plant there; but the species of this latter county has been since called E. coralloides.

966. EUPHORBIA CORALLOIDES, *Linn.*

Area (2).

Alien. Found near the parsonage, at Slinfold, in Sussex; to which it is conjectured to have been introduced originally by Mr. Manningham. First recorded under name of E. Esula; subsequently under that of E. pilosa; now received generally as E. coralloides.

967. EUPHORBIA ESULA, *Linn.*

Area [1 2] * * * * * * * * 11 * * 14.
South limit in Northumberland, Roxburgh, Berwick.
North limit in Haddington, Edinburgh, Linlithgow.
Estimate of provinces 2. Estimate of counties 6.

Latitude 55—56. Local (Scot.) type of distribution.
Agrarian region. Midagrarian zone.
Descends nearly to the coast level, in East Lowlands.
Ascends to 100 yards, less or more, in Scotland.
Range of mean annual temperature, say 47.

Native? Sylvestral, Septal. I have not seen the habitats of this species, which is treated as a native by several of our botanical writers. The above-mentioned counties are all for which I find localities on record, with the two exceptions of Somerset (Flo. Bath. Supp.) and Sussex (Eng. Flo.); in the latter of which the E. coralloides was thus mis-named at first; and the former appears not to have been clearly ascertained.

968. EUPHORBIA CYPARISSIAS, *Linn.*

Area (* * * 4 5 6 * * * 10 11 12 * 14).

Alien. Reported from the counties of Bedford, Stafford, Salop, Glamorgan, York, Northumberland, Cumberland, and Edinburgh; probably introduced to those counties in which it really has been found becoming wild, and mistaken in some others of those mentioned.

969. EUPHORBIA PARALIAS, *Linn.*

Area 1 2 3 4 * 6 7 * 9 * (11) 12 * (14).
South limit in Cornwall, Dorset, Sussex, Kent.
North limit in Isle of Man, Cumberland, Suffolk.
Estimate of provinces 8. Estimate of counties 20.
Latitude 50—55. Atlantic type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.

Ascends, at the coast level, to the Lake province.

Range of mean annual temperature 52—49.

Native. Littoral. Notwithstanding the occurrence of this species on the coast of Suffolk (whence I have seen specimens, collected by the Rev. W. Notcutt and Mr. D. Stock) it is referred to the Atlantic type, on account of its distribution being otherwise so decidedly western and southern, ranging along those coasts from Cumberland to Kent. It occurs on the ballast-hills of Tyne province; and it is enumerated in the Catalogue of the Botanical Society of Edinburgh, though as a species certainly introduced to that neighbourhood. The Catalogue, however, is not adapted to show on which side of the Forth, Lowland or Highland, 14 or 15, the species had been seen. Query, as a temporary straggler only?

970. EUPHORBIA PORTLANDICA, *Linn.*

Area 1 2 [3] * * 6 7 * 9 * * 12 13.

South limit in Cornwall, Isle of Wight, Sussex.

North limit in Wigton, Isle of Man, Lancashire.

Estimate of provinces 6. Estimate of counties 15.

Latitude 50—55. Atlantic type of distribution.

Agrarian region. Inferagrarian—Midagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends, at the coast level, to West Lowlands.

Range of mean annual temperature 52—49.

Native. Littoral. In addition to the counties above mentioned, this has been recorded in Devon, Dorset, mainland Hants, Glamorgan, Caermarthen, Pembroke, Caernarvon, Anglesea, and Kent; the last (Martyn, in B. G.) doubtless an error. The range of the present species, it may thus be seen, is more exclusively southern and western than that of E. Paralias.

971. EUPHORBIA EXIGUA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 * 14 15.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Forfar, Perth, Fife, Isle of Man.
Estimate of provinces 15. Estimate of counties 60.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Agrestal. The estimate of 60 counties may be rather too high; that of 50 would likely be too low. The provincial estimate includes the West Lowland province, for which I am not aware of any positive authority. Neither have I any authority for this species in the Lake province, except through the union of the Isle of Man to that province. Said by Gardiner, in his Flora of Forfarshire, to be frequent in that county; and the Edinburgh botanists attach the sign of frequency to the name in their Catalogue. Rare about Berwick. Omitted from the Floras of Glasgow, Aberdeen, Moray, and others more northerly than these three; as also from all my own local lists of species observed in the Highland provinces.

972. EUPHORBIA PEPLUS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Caithness, ——— ?
Estimate of provinces 17. Estimate of counties 75.

Latitude 50—59. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 350 yards, in East Highlands.

Range of mean annual temperature 52—43.

Native. Agrestal. The name of this species appears in a list of plants which I observed near Reay, on the north coast of Caithness; which is the only record in my possession to show that the species occurs to the northward or westward of the Caledonian Canal. Said to be frequent, though perhaps introduced, in Moray; common about Alvah and Aberdeen, and in Forfarshire. In 1832 I observed it at Castletown, in Braemar, Aberdeenshire, over 1000 feet of elevation; but the name does not appear in any other of my lists of plants noticed in the Highland counties, except those which relate to tracts at or near the coast level. Perhaps the county estimate might have been raised to 80; but more full or more exact information is still required respecting the existence of this species in the North Highlands and North Isles.

973. EUPHORBIA LATHYRIS, *Linn.*

Area (1 2 3 4 5 * * * * 10 11 * 13 * 15).

Alien. Some botanists regard this as a "really wild" or "truly wild" plant in thickets in the south of England; for example, it is so regarded by Mr. Borrer and by the authors of the Flora Hertfordiensis. It very readily and pertinaciously propagates itself, in a weed-like manner, in gardens; but it is naturally and usually a biennial, and as such, it is adapted to a warmer climate than that of the inland counties of England.

974. EUPHORBIA AMYGDALOIDES, *Linn.*

Area 1 2 3 4 5 6 7 8 * 10 11.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Northumberland, York.
Estimate of provinces 10. Estimate of counties 40.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—48.

Native. Sylvestral. In almost all the counties of the first five or six provinces; local or wanting in the rest of the English provinces. I am indebted to Mr. Storey for a Northumbrian specimen, collected by the Rev. J. C. Bigg, in a plantation at Linden, near Alnwick; and Mr. Moore reports it as lately discovered in Yorkshire, in a copse between Bilton and Wighill Park. For its occurrence in the counties more southward, as Derby, Montgomery, &c., authorities may be seen in the New Botanist's Guide.

EUPHORBIA CHARACIAS, *Linn.*

Area [5].

Incognit. Euphorbia amygdaloides appears to have been occasionally mistaken for this species, which has never been found wild in England; and which, it is said, would not bear the climate of this country without protection in winter. It has been reported to occur in the counties of Worcester and Stafford, and by several different observers.

† EUPHORBIA DULCIS, *Linn.*

† EUPHORBIA SALICIFOLIA, *Host.*

Area 15.

Aliens. The first of these (variety 'purpurata') is said by the Rev. George Gordon to have escaped about Gordon Castle and Grant Lodge gardens, in Moray. Mr. George Lawson has reported the second as naturalized in Mains Flowery Den, about two miles north from Dundee. See Phytologist iii. 345, for particulars.

975. BUXUS SEMPERVIRENS, *Linn.*

Area (1 2) 3 4 5 * * (8 * 10).
South limit in Somerset? Surrey, Kent.
North limit in Bedford? Bucks, Gloucester.
Estimate of provinces 3. Estimate of counties 4.
Latitude 51—52. Local (Germ.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to 100 yards, or lower, in Thames province.
Ascends to 200 yards, more or less, in same province.
Range of mean annual temperature, say 49—47.

Denizen. Sylvestral. It is difficult to exhibit the distribution of this shrub by the formula. In the first place, there is a doubt whether the box is truly a native shrub of England. Secondly, if originally a native, it would seem to have become extinct, or nearly so, in most of its natural habitats. Unfortunately for the indirect evidence of its nativity afforded by the names of places, as Box and Box End, this English word has so many different meanings, that its application to some places may have originated in

other circumstances than the growth of box (*Buxus*) there. Even where the origin of the name seems perfectly clear, as at Box Hill, Surrey, the shrub may have been introduced.

976. MERCURIALIS PERENNIS, *Linn.*
† MERCURIALIS OVATA, *S. & H.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Ross, Aberdeen, Argyle.
Estimate of provinces 17. Estimate of counties 75.
Latitude 50—58. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 550 or 600 yards, in East Highlands.
Range of mean annual temperature 52—41.

Native. Sylvestral, Septal. A scarce plant above the agrarian region; but assigned to the lowest zone of the arctic region because it was observed in the woods of Loch-na-gar, Aberdeenshire, at 1720 feet, and in Twll du, Caernarvonshire, at 1750 feet. M. ovata is unknown to me. From the accounts and remarks of other botanists, I suppose it to be a slight variety of M. perennis. Mr. Mitten says that it has been found in hedges, near Hurstpierpoint, in Sussex.

977. MERCURIALIS ANNUA, *Linn.*
977, b. MERCURIALIS AMBIGUA, *L. fil.*

Area 1 2 3 4 5 6 7 8 * * 11 * * * 15.
South limit in Devon, Isle of Wight, Kent.

North limit in Perth, Fife.
Estimate of provinces 10. Estimate of counties 25.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 yards, less or more, in England.
Range of mean annual temperature 51—47.

Native. Viatical, &c. Not a frequent plant in England; very local, and doubtfully indigenous, in Scotland. I have a specimen from Burntisland, Fifeshire, by favour of Professor Balfour; and in Hooker's Flora Scotica it is said to have been found in the parish of Aberfoyle, in Perthshire, by the Rev. Dr. Graham. The Edinburgh Society's Catalogue allows it to be native in their circuit, that is, in some of the counties bordering the Firth of Forth.

978. URTICA URENS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 400 yards, in the East Highlands.
Range of mean annual temperature 52—42.

Native. Agrestal, Viatical. A very common weed in England; and "frequent" even in the northern isles of Shetland.

979. URTICA DIOICA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zone.
Descends to the coast level, in the Peninsula.
Ascends to 800 yards, in the East Highlands.
Range of mean annual temperature 52—39.

Native. Viatical, Septal, &c. Abundantly common throughout Britain, the two upper zones excepted, and, perhaps, the Hebrides also, where it appears to have been observed only in one spot, by Balfour and Babington. I have only once met with it above 2000 feet of elevation; namely, under a great overhanging rock on the Breadalbane mountains, calculated at 2500 feet of elevation, and evidently much resorted to by sheep for the sake of its shelter. Here grew the Urtica dioica and Stellaria media, with some other low country weeds, probably conveyed to this spot by the sheep. The Urtica dioica is frequent about houses, sheep-pens, and under stone walls, at 500 or 600 yards of elevation in Scotland.

980. URTICA PILULIFERA, *Linn.*

Area (1 2 3 4 5 6 7 * 9 * 11).

Alien. Though long an inhabitant of England, whether by human introduction or otherwise, this species would seem to have very little tendency to diffuse itself over ex-

tended tracts of country. It remains local or again disappears, although reported from several different and distant counties; namely, Cornwall, Hants, Kent, Surrey, Essex, Suffolk, Stafford, Salop, Glamorgan, Anglesea, Lancaster, Durham, and Northumberland. Some of these counties may produce the U. Dodartii, and not U. pilulifera; but, if so, I am unable to distinguish them from the rest by the published records. My specimens of U. pilulifera are from Suffolk, collected by Mr. Fitt; and I see that "coarsely toothed" and "nearly entire" leaves occur occasionally on the same single plant. Nor do I find that the seeds of the coarsely toothed specimens from Suffolk, not quite ripe, are easily distinguishable from those of the nearly entire leaved plants from Kent and Essex. I suspect that U. pilulifera and U. Dodartii will prove to be only forms of a single species.

981. URTICA DODARTII, *Linn.*

Area (2 3 4).

Alien. Only of late distinguished from U. pilulifera by English botanists; and a reference may be made to the latter, *supra*, for the grounds on which they are conjectured not to be really distinct species. My specimens of U. Dodartii are from Kent (Sir W. C. Trevelyan) and Essex (Mr. E. G. Varenne, through the Botanical Society of London). It is also reported from the Isle of Wight, Norfolk, and Cambridge; — sown in the former by Dr. Bromfield, as we are informed by himself, in the Phytologist i. 806; the locality having been previously recorded for "U. pilulifera" in that periodical.

982. PARIETARIA OFFICINALIS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 * 17.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Ross ? Moray ? Banff, Aberdeen.
Estimate of provinces 16. Estimate of counties 70.
Latitude 50—58. British (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Rupestral, Viatical. Intermediate between the English and British type. By the Rev. George Gordon it is considered "certainly introduced" into Moray. If this view is correct, the county of Ross, on authority of Mr. Smith, in Mr. Gordon's Catalogue, may likewise be distrusted. In rejecting Ross and Moray, we should reduce the plant to the two lower zones, thus excluding the superagrarian zone; also discarding the province of North Highlands from its native area, and keeping the species more clearly within the English type of distribution. Some modern botanists subdivide P. officinalis into two separate species; namely, P. diffusa, the common English form, and P. erecta, which may possibly be different, while I do not at present venture so to treat it. Indeed, I am not in possession of the data which would be requisite for distinguishing the habitats one from the other of them. Mr. Babington says that P. erecta occurs in Essex, Pembroke, Linlithgow, and Stirling; and hence it will probably be found in many intermediate counties.

CANNABIS SATIVA, *Linn.*

Area (1 &c.)

Alien. Occasionally seen on waste ground in the south of England, perhaps introduced casually by the seeds in use for feeding caged birds, like the Phalaris canariensis and Linum usitatissimum, which occasionally are distributed by the same agency. Scarcely requiring to be mentioned among British plants; but it was taken into the list of "Excluded Species" in the London Catalogue of British plants, from some botanical work, the reference to which has been since mislaid.

983. HUMULUS LUPULUS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 (13 14 15).
South limit in Cornwall, Isle of Wight, Kent.
North limit in Cumberland, Westmoreland, Durham.
Estimate of provinces 12. Estimate of counties 50.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Denizen. Septal. Has the hop been introduced into Britain by human agency, or is it an aboriginal native? If native, how much of its present area, how many of its localities, should be deemed natural? — and how much of that area, how many of those localities, may be considered artificial? Who can undertake to answer these questions with certainty? Henslow and Babington let the Humulus

stand an unquestioned native; while Hooker marks it as an introduced plant. The localities in the southern provinces of England appear to countenance the views of the two former botanists; those in Scotland and the northern provinces of England better supporting the opinion of Sir William Hooker. I saw the hop in 1832, by the bridge at Castletown, in Braemar, near 1100 feet above the sea, and it was still there in 1844; but I presume this not to be an indigenous habitat. Omitted from the Floras of Moray, Aberdeen, Forfar, and the more northerly catalogues. Mr. Lawson mentions its occurrence in Fife, but only as an introduced plant. In the Edinburgh Society's Catalogue, and in the Flora of Berwick-on-Tweed, its true nativity is also questioned. It is enumerated in the Glasgow Flora, without the expression of distrust. Winch speaks of it as naturalized in hedges in Northumberland, and quotes two localities in the county of Durham, without repeating his doubt of its nativity in that county likewise.

984. ULMUS MONTANA, *Linn.*

Area general.
South limit in Devon, Isle of Wight, Sussex.
North limit in Hebrides, Sutherland.
Estimate of provinces 18. Estimate of counties 60.
Latitude 50—59. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 yards, in East Highlands. (Planted?)
Range of mean annual temperature 51—44.

Native. Sylvestral, &c. Rather thinly scattered through Britain, in the present time, if we reject the localities in which it appears to have been planted. There is much

reason for doubt, indeed, whether it can now be found in every province as a really native tree, although published localities and authorities might be adduced for every province.

985. ULMUS SUBEROSA, *Ehrh.*
986. ULMUS CAMPESTRIS, *Linn.*
987. ULMUS GLABRA, *Mill.*

Area 1 2 3 4 5 6 7 8 9 10 11 * (13 14 15).
South limit in Devon, Isle of Wight, Kent.
North limit in Northumberland.
Estimate of provinces 11. Estimate of counties 40.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Sylvestral, &c. The doubts mentioned under the preceding species, Ulmus montana, might be repeated here, and would be still more difficult to remove. In a paper published in the Phytologist, iii. 36, Dr. Planchon has placed all the reputedly British elms under two species, montana and campestris, distinguished one from the other by the position of the seed in the winged fruit. Besides the three above named, 985 — 6 — 7, Dr. Planchon holds the major, stricta, and carpinifolia, also as forms of U. campestris; so that we may say, in adopting his views, every British elm is U. campestris, — if it is not U. montana. But supposing the views of Dr. Planchon to be quite correct with respect to the character afforded by the fruit, it may still remain a question to be answered, whether the two names, montana and campestris, represent single

species respectively, or whether they represent groups of species. Some of the named forms would appear to be varieties raised in cultivation, and to have no really indigenous representatives; while one, U. glabra, would seem to be represented by smooth-leaved examples of either species. Hooker thinks only one species is indigenous in Scotland, U. montana; and great diversity of opinion on the question of nativity is shown by the authors of local floras and lists. The Botanical Society of Edinburgh questions the nativity of any species of Ulmus within the circle embraced by their Catalogue. Winch deems U. montana and suberosa indigenous in the province of Tyne, and denies U. campestris being so. Henslow reverses this with reference to Britain in general; marking the U. suberosa as not indigenous, and allowing campestris, with all the others, except U. major, to be native. Babington discards only U. major from the native list. I suspect that these authors knew but little about the indigenous elms, and I cannot myself pretend to a much higher degree of knowledge in the matter.

988. QUERCUS ROBUR, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Ross, Aberdeen, Western Inverness.
Estimate of provinces 17. Estimate of counties 75.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 500 yards, in East Highlands (Dickie).
Range of mean annual temperature 52—42.
Native. Sylvestral, &c. The distribution, as above set

forth, must be understood to be drawn out from the published records and my own notes about Quercus Robur, sometimes distinguished from Q. sessiliflora, sometimes not so distinguished. In other words, it is the distribution of Quercus Robur (Q. pedunculata) more or less confused with Q. sessiliflora. Dr. Dickie mentions the oak as high as 1500 feet in Aberdeenshire, "on steep rocks above Pannanick Wells, on the south side of the Dee, about one mile and a half below Ballater;" but he was not quite certain about the species. I have myself not seen either of the oaks above 1000 or 1100 feet in Scotland.

988, c. QUERCUS SESSILIFLORA, *Salisb.*
988, b. QUERCUS INTERMEDIA, *Don.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Devon, Isle of Wight, Kent.
North limit in Sutherland (Dr. G. Johnston).
Estimate of provinces 17. Estimate of counties 70.
Latitude 50—59. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to ——— ? (300 yards ?).
Range of mean annual temperature 51—46.

Native. Sylvestral, &c. It is remarkable to find so much uncertainty in the opinions of botanists on important points relating to our British oaks. First, are there one or two (or even three) species ? Secondly, what is the true distribution of each species, real or supposed, apart from the other or others ? Thirdly, which of them yields the best timber ? These queries have not yet been replied to with certainty or unanimity. It would seem, however, that Q. sessiliflora was once the most generally distributed in

Britain by natural agencies, while Q. Robur appears to be the most usually planted, and therefore now the commonest of the two or three. I am unprepared to state the elevation which is attained by Q. sessiliflora, certainly such, but suppose it to reach 300 or 400 yards in England.

CASTANEA VULGARIS, *Lam.*

Area (1 &c.)

Alien. There seems very slender reason for including this tree among those of Britain. Though frequently planted, it can be said to be naturalized only in the sense in which the laurels and laburnums of our shrubberies are so. It grows well in England and the southern counties of Scotland; ripens its fruit usually in the south of England, and occasionally also in Scotland; and the seeds will vegetate where they fall. But it does not spontaneously spread and multiply, so as to obtain a hold over the wastes and neglected places, after the manner in which we see the Quercus or the Pinus establish itself without human agency, or even in defiance of human processes which oppose and impede the natural tendency to spontaneous increase.

989. FAGUS SYLVATICA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 (12 13 14 15 16 17).
South limit in Devon? Dorset, Hants, Kent.
North limit in Northumberland?
Estimate of provinces 11. Estimate of counties 30.
Latitude 50—54 (56). English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Channel.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 51—47.

Native. Sylvestral. Though quite believing this tree to be truly native in the south of England, as in the counties of Hants and Sussex; and not improbably indigenous also also in counties much more northerly, as in those of Stafford and Chester, I find it quite impossible to distinguish the counties in which the beech does occur as a native, from those in which it now appears only as a planted tree. Its nativity in Scotland, where it grows well, is generally denied or distrusted. Winch treats it as native of the Tyne province. In the Floras of Yorkshire and Nottinghamshire, and in Howitt's list of Derbyshire plants, it is given without the expression of doubt on the point; as also in several of the local lists and floras for more southern counties or tracts, particularly those including portions of the chalk basins of England. It may be said that the beech is certainly native in the provinces of the Channel and Thames; probably so, in those of the Ouse, Trent, Mersey, and Severn; also in the Peninsula, at least in its most easterly county of Somerset; more dubiously, in Wales, Humber, and Tyne; introduced only, in Scotland and the Lake province.

990. CARPINUS BETULUS, *Linn.*

Area 1 2 3 4 5 * (7 8 * 10 11 * 13 14 15).
South limit in Devon, Kent, ——— ?
North limit in Norfolk, Cambridge, ——— ?
Estimate of provinces 5. Estimate of counties 20.
Latitude 50—53 (55). English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, or nearly so.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 50—48.

Native. Sylvestral. Equally difficult as in the case of the beech, to say where this tree is a genuine native and where it exists only as an introduced species. Generally allowed, I think, not to be indigenous in Scotland. Winch says that it is not native in the north of England. In the Floras of Yorkshire, Nottinghamshire, Anglesea, Staffordshire, Charnwood, &c., it is included without negation, but also without any satisfactory evidence in support of its real nativity in those counties and tracts. It would seem to be truly indigenous in the provinces of Thames and Ouse; quite possibly so in several others likewise.

991. CORYLUS AVELLANA, *Linn.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Orkney, Hebrides, Sutherland.

Estimate of provinces 18. Estimate of counties 81.

Latitude 50—60. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 600 yards, in East Highlands.

Range of mean annual temperature 52—42.

Native. Sylvestral, Septal. Pleasant is it to pass onward from the imperfectly distinguished species of Ulmus and Quercus, and the imperfectly ascertained distribution of Fagus and Carpinus, to a species which is so familiarly known as the shrub now under notice. The Shetland Isles would seem to offer the only exception to the generality of its horizontal distribution in Britain. In vertical range it rises occasionally above the actual limit of cultivation, on

the sunny side of rocks, where it may be considered partially in a condition approximating to that of the fruit trees which are trained on walls in our garden. Its usual upper limit otherwise would seem to be at about 400 yards of elevation, in the Highlands, nearly on a line with the Pteris and corn cultivation. Is it a native in the Hebrides?

992. ALNUS GLUTINOSA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Hebrides, Sutherland.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—59. British type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 550 yards, in East Highlands.
Range of mean annual temperature 52—41.

Native. Sylvestral, Paludal. Absent from the Floras of Shetland and Orkney; nor am I prepared to cite any authority for its occurrence in the Isle of Man. At the height of 1500 feet, in Aberdeen and Moray, I have seen trees of the alder full three feet in girth, and smaller examples at rather a higher elevation. Both this tree and the Corylus might be considered to attain the inferarctic zone. But if so, they are so local within the arctic region, as barely to belong to it.

993. BETULA ALBA, *Linn.*

Area general?
South limit in Cornwall, Isle of Wight, Kent.

North limit in Orkney, Sutherland.

Estimate of provinces 18. Estimate of counties 80.

Latitude 50—60. British type of distribution.

A. A. regions. Inferagrarian—Midarctic zones.

Descends to the coast level, in the Peninsula.

Ascends to 700 yards, or upwards, in East Highlands.

Range of mean annual temperature 52—40.

Native. Sylvestral, Ericetal. Omitted from the lists for Shetland, Hebrides, Isle of Man, and some tracts of small extent in England; so that possibly the estimate of 75 might come nearer to the true number of counties than is that of 80. This tree is frequent on the Highland mountains up to 600 or 700 yards; but rare at any greater elevation; although, as was remarked in my earliest volume on plant-geography, *Outlines, &c.*, I think to have seen it much higher than 2000 feet,—certainly so, in form of a seedling plant of it on the acclivity of Ben Nevis. The Betula alba of authors has been subdivided into several species, under the names of glutinosa, pubescens, pendula, &c. There certainly are great variations in the forms of the leaves and fruit, but I have been unable to satisfy myself about the distinctness of the alleged species on examining a large series of specimens, and likewise very numerous living trees in England and the Highlands. The extreme forms of B. pendula and B. glutinosa are very different; but the intermediate forms are numerous, and look like links of connexion.

994. BETULA NANA, *Linn.*

Area * * * * * * * * * * 11 * 13 14 15 16 17.

South limit in Northumberland, Berwick, Lanark.

North limit in Ross, Aberdeen, West Inverness.

Estimate of provinces 6. Estimate of counties 12.
Latitude 55—58. Highland type of distribution.
Arctic region. Inferarctic—Midarctic zones.
Descends to 550 yards, in East Highlands.
Ascends to 900 yards, in the same province.
Range of mean annual temperature 41—38.

Native. Ericetal. A scarce shrub, probably rendered more scarce by the periodical burning of the heaths and moors, in order to produce better pasturage for sheep. The locality in Northumberland, and perhaps those in Berwick and Lanark, may be within the agrarian region. Mr. Babington thinks that we have two species under this name in Scotland; and it is reported that B. intermedia has been found in Forfarshire.

995. POPULUS ALBA, *Linn.*

Area 1 2 3 4 5 * 7 8 9 * 11 * (13) 14 (15 16) * [18].
South limit in Cornwall, Dorset, Sussex, Kent.
North limit in Northumberland, Edinburgh? Lanark?
Estimate of provinces 12. Estimate of counties 40.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 200 yards, more or less, in Tyne.
Range of mean annual temperature 52—46.

Native. Sylvestral, Septal. Uncertain whether this tree ought to be deemed indigenous in Scotland. Macculloch said that a few stunted plants of this species compose all the trees in the island of Lewis, Outer Hebrides; which was certainly an error, since Balfour and Babington mention the P. tremula as the only species of the genus seen by them in the Hebrides. Dr. Balfour gives the name of

P. alba in a list of plants seen by him in Cantire, Argyleshire. The Rev. G. Gordon holds it certainly introduced in Moray. It is omitted from the Flora of Aberdeen, and vaguely indicated, as a planted tree, in that of Forfarshire. In the Catalogue printed for the Botanical Society of Edinburgh, it is entered as a native, although very rare in their circuit. In the Flora of Berwick, it is mentioned as an introduced tree. But Winch holds it to be truly indigenous in the province of Tyne. The genus 'Populus' appears to be altogether omitted from the Flora of Yorkshire, likely enough by oversight in the author. P. alba is clearly indigenous in the southern provinces of England. As Winch states that it grows at a "considerable elevation" on the sides of the moors in the province of Tyne, the range of elevation is carried up to 200 yards, less or more, and into the superagrarian zone, with a mean temperature to correspond.

996. POPULUS CANESCENS, *Sm.*

Area 1 2 3 4 5 * 7 8 * * 11 * * (14).
South limit in Devon, Kent, ——— ?
North limit in Northumberland, ——— ?
Estimate of provinces 10. Estimate of counties 30.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—48.

Native. Sylvestral, Septal. The distribution of this species can be shown even less satisfactorily than that of P. alba, with which latter species it is perhaps often confused. I fear that very little reliance can be placed upon

the published data towards showing the true localities and distribution of P. canescens, as regards either their sufficiency or their correctness.

997. POPULUS TREMULA, *Linn.*

Area general.
South limit in Devon, Isle of Wight, Kent.
North limit in Orkney, Hebrides, Sutherland.
Estimate of provinces 18. Estimate of counties 75.
Latitude 50—60 (61). British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 550 yards, in East Highlands.
Range of mean annual temperature 51—41.

Native. Sylvestral, &c. More frequent in Scotland and the northern provinces of England, but found occasionally in the south of England. In the Highlands it ascends to 400 yards, and upwards, in several places, but seldom exceeds 500 yards. Like the Alnus and Corylus, this tree also might be considered to ascend slightly above the agrarian region in Scotland. Not reaching to the Shetland Isles, according to Edmondston's Flora, unless that author has mistaken the present species for P. nigra, which latter he does enumerate in his list, although it would seem far less likely than is P. tremula to be found in Shetland.

998. POPULUS NIGRA, *Linn.*

Area 1 2 3 4 5 * 7 8 9 10 11 * (13) 14 (15 16) * [18].
South limit in Devon, Isle of Wight, ——— ?
North limit in Northumberland, Edinburgh ? Lanark ?

Estimate of provinces 14. Estimate of counties 40.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula ?
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Sylvestral, Septal. Given as an indigenous tree in the Flora of Shetland by Edmondston; but there seems a strong presumption that P. tremula has been thus misnamed. Introduced into Moray, according to Gordon; and apparently so in Forfarshire, by the vague notice of it in Gardiner's Flora. Given as a native of the Edinburgh circuit, in the Catalogue mentioned under P. alba; and also enumerated by Winch, among the plants of the Tyne, without challenge. It is, however, now almost impossible to determine over what area, and in what localities, this tree is really indigenous in Britain.

SALIX.

It is with a disinclination, amounting almost to aversion and disgust, that I attempt to give the distribution of the species in this variable genus,—not because they are in themselves uninteresting, for their variety of character and stature renders them otherwise,—not because they are unimportant, for their numbers and wide distribution render them a prominent feature in British botany,—but because they have been rendered botanically odious in books. Most botanists shrink from the study of them, on account of the difficulties thrown in their way by excessive subdivisions in books, and the consequent uncertainties and misapplications of names which will continue to impede and perplex, until some botanist of comprehensive and vigorous

mind shall take up the book-damaged genus, with a determination to scrutinize closely the subdivisions of former writers, to investigate the species afresh in their native habitats, and to recognize no species as real and settled without careful examination of an ample series of specimens from different places of growth. But this can scarcely be; for a mind of sufficiently philosophic character would naturally seek higher objects than the descriptions of technical botany, on which to employ its powers and energy.

Taking the genus as it now appears in our descriptive Floras, I should have preferred to treat the distribution of each quasi-species by itself; and thus to have enabled any other botanist to make the combinations which he might think fit. Unfortunately, great difficulties present themselves in the way of this procedure at present, by the extreme paucity of the data respecting the localities, altitudes, &c., of several of the supposed species; and by the numerous misapplications of names in books and herbaria, which render many of the existing data about other dubious species false in fact, and therefore something worse than no data at all. I have consequently decided to adhere to the arrangement of the Rev. J. E. Leefe, in the London Catalogue of British Plants, keeping together all the sub-species and varieties which have been placed under a single No. by that well-known author of the Salictum Britannicum. In the next volume of the Cybele I may hope to introduce such a tabular list as will suffice to show generally the area and distribution of each subordinate form, whether species or variety. For example, in Mr. Leefe's series here adopted, "1010. SALIX CINEREA, *Linn.*" is entered as one species, including the three subordinate species, 'cinerea,' 'aquatica,' 'oleifolia,' of Smith and others; and the formula is consequently filled up by fi-

gures, &c., which show the distribution of the triad, or three units, treated as one single unit; but the distribution which it is my wish to ascertain and show eventually, is that of each unit in the triad, apart from the other two units. The data within my reach at present do not enable me to accomplish this, because they do not enable me to separate the errors from the true records of localities.

999. SALIX PENTANDRA, *Linn.*

Area (1 2) 3 4 5 6 7 8 9 10 11 12 13 14 15 16 * (18.)
South limit in Surrey, Pembroke. (Devon, Sussex.)
North limit in Moray? Aberdeen, Argyle. (Hebrides.)
Estimate of provinces 14. Estimate of counties 40.
Latitude 51—58. Scottish type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in Thames or Severn.
Ascends to 100 or 200 yards, in Scotland.
Range of mean annual temperature 49—46.

Native. Sylvestral, &c. Considerable uncertainty attaches to the habitats of this shrub at each extremity of Britain. It prevails chiefly in the Lowlands of Scotland and Northern provinces of England. Balfour and Babington enumerate it among their species of the Outer Hebrides, but give for it only the very suspicious locality of Roddal, in Harris, where, and where only, various other doubtful trees and shrubs appear also to have been observed. Though it is rare to the south-eastward of the Trent and Severn, I am disposed to receive it as a native of the Thames province. To the provinces of the Peninsula (Devon; Mr. Abraham) and Channel (Sussex; Mr. Borrer) it may have been introduced.

1000. SALIX CUSPIDATA, *Schultz.*

Area (5).

Alien? This is given as an undoubted native in Babington's Manual of British Botany, with the following habitat: "Near Shrewsbury, Rev. W. A. Leighton;" and from that locality I have been favored with cuttings of the species by Mr. Leighton himself. From Mr. Borrer, however, I learn that the habitat is purely an artificial one, and consists only of a few trees planted in a hedge-row; and where, I understand, they were observed by Messrs. Leighton and Babington in 1843. It is to be regretted, under the circumstances, that the species should have been given as a true native, without explanation, in the work mentioned. Has it, or has it not, been found also in Westmoreland?

1001. SALIX FRAGILIS, *Linn.*
1001* SALIX DECIPIENS, *Hoffm.*
1001** SALIX RUSSELLIANA, *Sm.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 16 * (18).
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, West-Inverness. (Hebrides.)
Estimate of provinces 16. Estimate of counties 70.
Latitude 50—58. British (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.
Native. Septal, &c. Possibly not indigenous so far

north as above given, but it has become almost impossible to distinguish between its natural and artificial area, &c. I think to have seen S. Russelliana in Ross-shire; and Balfour and Babington mention it among the trees of Roddal, in Harris, where it may have been planted, as well as S. pentandra, viminalis, and alba. The Rev. G. Gordon deems S. Russelliana "certainly introduced," and S. fragilis only "doubtfully native," in Moray. Dr. Dickie gives only a single locality for the former, in the vicinity of Aberdeen, and omits the latter from his list. In Gardiner's Flora of Forfarshire, both names occur, but only quoted from the unsafe authority of Don's list. Should, perhaps, rather be referred to the English than to the British type of distribution.

1002. SALIX ALBA, *Linn.*
1002* SALIX VITELLINA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 * (18).
South limit in Cornwall, Isle of Wight, Kent.
North limit in Aberdeen, Argyle. (Moray, Hebrides.)
Estimate of provinces 16. Estimate of counties 70.
Latitude 50—58. English (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Septal, &c. Like the preceding, this also may rather belong to the English than to the British type of distribution. It is enumerated in Balfour and Babington's list of Hebridean species, but with only the suspicious indication of "Glen of Roddal," for habitat and evidence. Frequent in Moray, but doubtfully native there, according

to the Rev. G. Gordon, in Collectanea. Common about Aberdeen, by Dickie's Flora Abredonensis. Frequent, but likely introduced, in Forfarshire, according to Gardiner's Flora of that county.

1003. SALIX UNDULATA, *Ehrh.*

Area * 2 3 4 5 * * * * 10 * * * * 15.
South limit in Hants, Sussex, —— ?
North limit in Forfar, York, —— ?
Estimate of provinces 6. Estimate of counties 8.
Latitude 50—57. English (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, or nearly so.
Ascends to 100 yards, less or more.
Range of mean annual temperature 50—47.

Native? Sylvestral, &c. A doubtful species, and a doubtful native. According to the reports and records of botanists, it occurs in Hants (Mr. Notcutt), Sussex (doubtful native, Mr. Borrer), Essex (Mr. E. Forster), Cambridge (Henslow's Catalogue, &c.), Salop (Flo. Shrops.), Monmouth (Mr. Conway), York (Flora of Yorkshire, without locality mentioned), and Forfar (G. Don, &c.). The formula is drawn up according to these alleged habitats; but of my own knowledge I can say little or nothing about the real distribution of the present species.

1004. SALIX TRIANDRA, *Linn.*
1004* SALIX AMYGDALINA, *Sm.*

Area 1 2 3 4 5 6 7 8 * 10 11 * * 14 (15).
South limit in Devon, Isle of Wight, Kent.

North limit in Edinburgh, —— ?
Estimate of provinces 12. Estimate of counties 50.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in Peninsula or Channel.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Septal, &c. Mr. Gardiner indicates one locality for each of these alleged species; considering the S. triandra as "probably planted," and passing the S. amygdalina without remark. In the Edinburgh Catalogue S. triandra is entered as a native, though rare. These are the only two Scottish counties which I find reported for either of the species. Winch gives both as natives of the Tyne province. S. triandra is frequent in some of the southern counties of England, though doubtless introduced to many of its present localities. This, like some other species, might be as correctly referred to the paludal, as to the septal, plants.

1005. SALIX PURPUREA, *Linn.*
1005* SALIX HELIX, *Linn.*

Area 1 2 3 4 5 * 7 8 * 10 11 12 13 14 15 16.
South limit in Devon, Sussex, Kent.
North limit in Aberdeen, Argyle, —— ?
Estimate of provinces 14. Estimate of counties 50.
Latitude 50—58. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.
Native. Septal, &c. The S. Helix is mentioned as

"not common" in the Flora Abredonensis. Both Helix and purpurea are enumerated in the Flora of Forfarshire, but only on the authority of G. Don. In the Edinburgh Catalogue, S. Helix is marked as being frequent and native. Whether really indigenous northward of the Forth may be doubted.

1006. SALIX RUBRA, *Huds.*

Area 1 2 3 4 * * 7 8 * 10 11 12 * 14 (15).
South limit in Devon, Hants, Kent.
North limit about Edinburgh. (Forfar.)
Estimate of provinces 12. Estimate of counties 40.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in Peninsula or Channel.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.
Native. Septal, &c. S. Forbyana has been introduced into a Forfarshire locality, according to Gardiner's Flora of that county; but S. rubra is enumerated among the Forfarshire species by G. Don. The S. rubra is also marked, as a native and frequent, in the Edinburgh Catalogue.

1007. SALIX VIMINALIS, *Linn.*
1007* SALIX STIPULARIS, *Sm.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 16 * (18).
South limit in Devon, Isle of Wight, Kent.
North limit in Moray, West-Inverness. (Hebrides.)
Estimate of provinces 16. Estimate of counties 70.
Latitude 50—58. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.
Native. Septal, &c. Observed by Balfour and Babington in the distrusted locality of Roddal, in Harris, Outer Hebrides. The Rev. G. Gordon marks it as being frequent and an admitted native in Moray.

1008. SALIX SMITHIANA, *Willd.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 * 14 15 16.
South limit in Cornwall, Devon, Sussex, Kent.
North limit in Forfar, Argyle, —— ?
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.
Native. Septal, &c. In Forfarshire, according to Mr. G. Don's list. In Argyleshire, by Professor Balfour's list of species seen by himself in Islay or Cantyre. In the Edinburgh Catalogue, it is recognized as native, though rare, in the counties of the Forth. For my own part, I find so much difficulty in distinguishing between this and S. viminalis, as almost to be prevented thereby from using my own notes on their localities while indicating their distribution apart from each other.

SALIX HOLOSERICEA, *Willd.*

Area [2].

Incognit? "This is a plant which Mr. Borrer received from Sir J. E. Smith, marked *S. acuminata var. rugosa;* but which he thinks probably allied to the *S. holosericea* of Willd., and distinguishes it from the true *acuminata* by its sessile pale-coloured stigmas and leaves greener and more rugose above, and more strongly veined beneath. Mr. Forster says that Mr. Crowe regarded it as a *var. S. Smithiana,* or as an undescribed species." (Hooker's British Flora, edit. 5.) The name "holosericea" occurs in lists of species and localities for other counties, as Salop and Caermarthen, but appears to be a synonym of S. acuminata in these instances. Without clearly understanding the matter, I suppose that Willdenow's S. holosericea has not been found indigenous, if ever found at all, in Britain.

1009. SALIX ACUMINATA, *Sm.*

Area 1 2 3 4 5 6 7 8 * 10 11 12 13 14 * 16 * [18].
South limit in Devon, Dorset, Hants, Sussex.
North limit in Argyle, Edinburgh. [Orkney?]
Estimate of provinces 14. Estimate of counties 40.
Latitude 50—56 (60). English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in Peninsula or Channel.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Septal, &c. Recorded from about thirty counties only; but if Neill is correct in reporting its extension northward to the Orkney Isles the estimate of forty counties may eventually be found too low. I am very imperfectly acquainted with this species myself, and give the area, limits, &c. according to the recorded localities.

1010. SALIX CINEREA, *Linn.*

Area general?
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 400 yards, in East Highlands.
Range of mean annual temperature 52—42.

Native. Septal, &c. I am not prepared to cite positively an authority for the occurrence of this species in the North Highland province, though believing that it was seen there by myself some years ago. On this account I am compelled to make the provincial generality of the area only interrogative instead of positive.

1011. SALIX AURITA, *Linn.*

Area general?
South limit in Devon, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 80.

Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 700 yards, in the East Highlands.
Range of mean annual temperature 51—40.

Native. Septal, Ericetal, &c. I am not prepared to adduce an authority for the existence of this willow in the province of the Lakes, except my own recollection, unaided by notes and rather too distant for reliance. The apparent absence of S. aurita from the Isle of Man, with the not improbable chance of one or two other counties also wanting it, has induced to the comital estimate of 80 rather than 82. Probably more frequent than S. cinerea in the Highland provinces; but less so in the southern provinces of England.

1012. SALIX CAPREA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Aberdeen, West-Inverness.
Estimate of provinces 17. Estimate of counties 75.
Latitude 50—58. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 700 yards, in East Highlands.
Range of mean annual temperature 52—41.

Native. Septal, &c. I have no authority for the occurrence of this very common English willow in either of the two northerly provinces; but the presumption seems so strong for that of the North Highlands, at least, that I reckon this latter province in the estimate. Possibly the "S. aquatica" of the Shetland Flora may prove to be

S. caprea, which latter is stated to occur in Faroe, where the former would seem to be unknown, equally as any other sub-species referred to S. cinerea in this volume.

1013. SALIX NIGRICANS, *Fries.*

Area * * 3 4 5 * * 8 * 10 11 12 13 14 15 16.
South limit in Surrey? Oxford? Hereford?
North limit in Aberdeen, Perth, Argyle.
Estimate of provinces 10. Estimate of counties 20.
Latitude 51—58. Boreal type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to 100 yards, or lower, in Thames province?
Ascends to 800 yards, more or less, in East Highlands.
Range of mean annual temperature 48—39.
Native. Rupestral, &c. In drawing up the formula for the distribution of this species, or group of species, I cannot feel myself warranted in wholly rejecting the provinces of Thames, Ouse, and Severn; although not without suspicion that the willows of these three provinces should not be mingled with the really Highland or boreal willows which are collected together under the common designation of "nigricans" or "nigricantes."

1014. SALIX HASTATA, *Linn.*

Area * * 3 4 * * * * * * * * * * 15.
South limit in Middlesex? Norfolk?
North limit in Forfar.
Estimate of provinces 3. Estimate of counties 3.
Latitude 51—57. Local type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.

Descends to the sea level, in East Highlands.

Ascends to 50 yards, less or more, in Thames?

Range of mean annual temperature 49—47.

Native. Sylvestral? This is totally unknown to me, beyond the name and descriptions in books. The distribution is given above in accordance with the localities reported; but there is too much reason to fear that the counties of Middlesex (Mr. Joseph Woods) and Norfolk (Mr. Crowe) are erroneous.

1015. SALIX BICOLOR, *Ehrh.*

Area * * 3 4 * 6 * * * 10 11 12 13 * 15 16.

South limit in Sussex? Surrey? Herts? Caermarthen?

North limit in Moray, West Inverness.

Estimate of provinces 9. Estimate of counties 20.

Latitude 51—58. Scottish (?) type of distribution.

A. A. regions. Inferagrarian—Midarctic zones.

Descends to the coast level, or nearly so, in England.

Ascends to 800 yards, less or more, in East Highlands.

Range of mean annual temperature 49—39.

Native. Rupestral, &c. Similar difficulty or distrust occurs with respect to the southern counties on record for this species or group, as was above mentioned under that of S. nigricans. I have never seen in the southern provinces of England any willows which I could identify satisfactorily with those of the glens and mountain rocks of Scotland, passing under one or other of the various names placed under No. 1015 (S. bicolor) in the London Catalogue of British Plants. And hence, as in too many other instances, I am compelled for the present to give the distribution of names from books, rather than Nature's true distribution of these willows themselves.

1016. SALIX AMBIGUA, *Ehrh.*

Area * 2 3 4 * * * * * * 11 * * * 15 16 17 18.
South limit in Sussex, Essex, Suffolk.
North limit in Orkney, Caithness, Isle of Staffa.
Estimate of provinces 8. Estimate of counties 10.
Latitude 50—60. Local (Brit.) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, or nearly so, in England.
Ascends to 400 yards, or upwards, in East Highlands.
Range of mean annual temperature 49—43.

Native. Ericetal. This is quite unknown to me; and I am thus compelled to sketch out the distribution very unsatisfactorily from the slight mention of counties for the species by Mr. Borrer, in the Supplement to English Botany, with some additions from Winch and Gardiner, who can scarcely be deemed very safe authorities for the species of a genus so difficult and perplexing as the one now under notice.

1017. SALIX FUSCA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 700 yards, in East Highlands.
Range of mean annual temperature 52—40.

Native. Ericetal. Not enumerated by Mr. E. Forbes among the plants of the Isle of Man; but the omission of various willows from many local lists may frequently be attributed to uncertainties regarding their nomenclature. Possibly S. fusca, in some of its various forms, may be found in the midarctic zone, since it really does attain the lower level of some truly alpine plants in peculiar situations; as, for example, that of the Sibbaldia procumbens in the pass from Glen Shee towards Castletown in Braemar.

1018. SALIX ANGUSTIFOLIA, *Wulf.*

Area * * * * * * * * * * * * 13 * 15 * * [18].
South limit in Dumfries.
North limit in Forfar.
Estimate of provinces 2. Estimate of counties 2.
Latitude 55—57. Local (Highl.) type of distribution.
A. A. regions. Superagrarian—Inferarctic zones?
Descends to ——— ?
Ascends to ——— ?
Range of mean annual temperature ——— ?

Native. Rupestral. Said to grow on the Clova Mountains, and on the banks of the Nith, above twenty miles from Dumfries. The name occurs in Lowe's or Barry's Orkney list; but it is impossible to say what species was there intended. The shrub is unknown to me, and I can only give a rough and imperfect approximation to its distribution, grounded on these very few records of its localities.

1019. SALIX ROSMARINIFOLIA, *Linn.*

Area * 2 * 4 5 * * * * 10 11 * * * 15 16.
South limit in Sussex, Suffolk, Monmouth.
North limit in Islay, Aberdeen, Durham, York.
Estimate of provinces 7. Estimate of counties 7.
Latitude 50—58. Local (Scot.) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in Ouse province.
Ascends to 400 yards, in East Highlands.
Range of mean annual temperature 49—42.

Native. Ericetal. A doubtful species, and with localities equally doubtful. Besides the seven counties above mentioned, it is said to grow within thirty miles from Poole, in Dorset, according to Dr. Salter's Catalogue. Not seen for several years past in the recorded habitats for Sussex and Suffolk.

1020. SALIX DONIANA, *Sm.*

Area * * * * * * * * * * * * * * * 15.
South limit in Forfar.
North limit in the same county.
Estimate of provinces 1. Estimate of counties 1.
Latitude 56—57. Local (Scot.) type of distribution.
Agrarian region. Superagrarian zone?
Descends to ——— ?
Ascends to ——— ?
Range of mean annual temperature, say 47 or 46.

Native. Sylvestral. Of this I know nothing, except by the meagre accounts of it in books. It is said to grow in Baldovan [Baldowen?] Woods, Forfarshire.

1021. Salix arbuscula, *Linn.*

Area * * * * * * * * * * * * 13 * 15 16 * 18.
South limit in Dumfries, Perth, Forfar.
North limit in Orkney, Aberdeen, Argyle.
Estimate of provinces 4. Estimate of counties 6.
Latitude 55—60. Highland type of distribution.
Arctic region. Inferarctic—Midarctic zones.
Descends to 500 yards, less or more, in E. Highlands.
Ascends to 800 yards, more or less, in same province.
Range of mean annual temperature, say 45—41.
Native. Rupestral. Possibly descends within the superagrarian zone; and if really to be found in Orkney, it will there be below 500 yards.

1022. Salix Lapponum, *Linn.*
1022*. Salix glauca, *Sm.*

Area * * * * * [6 * 8] * * 11 * * 14 15 16 17 18.
South limit in Durham, Edinburgh, Stirling.
North limit in Orkney, Sutherland, Ross.
Estimate of provinces 6. Estimate of counties 12.
Latitude 54—60. Highland type of distribution.
A. A. regions. Superagrarian—Midarctic zones.
Descends to 200 yards, or lower, in East Lowlands.
Ascends to 850 yards, in East Highlands.
Range of mean annual temperature 46—39.
Native. Rupestral. Has been reported to grow in South Wales and Nottinghamshire; both of which may likely be erroneous records. There appears less doubt about the county of Durham, in the province of Tyne; because a specimen from Teesdale was shown to Mr. Winch

by Mr. Harriman, although the exact locality could not be recollected. Rather frequent on the Grampians in the East Highland province.

1023. SALIX MYRSINITES, *Linn.*

Area * * * * * * * * * [10] * * * * 15 [16].
South limit in Perth, Forfar.
North limit in Moray, Aberdeen.
Estimate of provinces 1. Estimate of counties 4.
Latitude 56—58. Highland type of distribution.
Arctic region. Midarctic zone.
Descends to 800 yards, less or more.
Ascends to 900 yards, more or less.
Range of mean annual temperature, say 39—38.

Native. Rupestral. I am not acquainted with this species, which has been recorded from York and Argyle, in addition to the four counties mentioned above. As it is stated to occur on the rocks of Clova and Canlochen, on Craigalleach and in Glen Callater, I think the altitude must run somewhere between 750 and 950 yards; but in this, as in other instances of plants which I have not collected with my own hand, I am compelled to substitute a rough guess, in place of proper calculations.

1024. SALIX PROCUMBENS, *Forbes.*

Area * * * * * * * * * * * * * * 15 16.
South limit in Perth, Forfar.
North limit in Moray, Argyle.
Estimate of provinces 2. Estimate of counties 4.
Latitude 56—58. Highland type of distribution.

Arctic region.

Descends to 800 yards, less or more.

Ascends to 900 yards, more or less.

Range of mean annual temperature, say 39—38.

Native. Rupestral. With this also I still remain unacquainted, and mention above the only four counties in which I find it recorded to occur; one or two of which can scarcely be relied upon until verified again. "This seems to be the *S. retusa*, With. Bot. Arr. ed. 8, v. ii. p. 49, with a fig." (Hook. Br. Flo. ed. 5).

SALIX RETUSA, *Linn.*
SALIX SERPYLLIFOLIA, *Scop.*

Area [15].

Incognit. "Fries (Mant. i. 76) states that 'beautiful specimens of the variety *serpyllifolia* collected by Mr. Winch in Breadalbane are in Hornemann's herbarium.' It is not to be found in Mr. Winch's herbarium." (Bab. Man. edit. 2). See Hooker's note on S. retusa, under S. procumbens above. S. retusa was recorded in the Linnean Transactions, as found on Ben Lawers, on the authority of Dickson.

1025. SALIX LANATA, *Linn.*

Area * * * * * * * * * * * * * * * 15.

South limit in Forfar.

North limit in Aberdeen.

Estimate of provinces 1. Estimate of counties 2.

Latitude 56—57. Highland type of distribution.

Arctic region. Midarctic zone.

Descends to 800 yards, less or more.

Ascends to 900 yards, less or more.

Range of mean annual temperature 39—38.

Native. Rupestral, Uliginal. Very local, being restricted to a few rocky glens in the eastern Grampians, at the upper ends of Glens Clova, Isla, and Callater. I never ascertained the altitudes of any of its stations exactly, but have no doubt about the above indications being very near the truth. It certainly occurs between 800 and 900 yards, and perhaps not lower than the former, nor higher than the latter elevation.

1026. SALIX RETICULATA, *Linn.*

Area * * * * * * [7 * * 10 * 12] * * 15 * 17.

South limit in Perth, Forfar, Aberdeen.

North limit in Sutherland.

Estimate of provinces 2. Estimate of counties 4.

Latitude 56—59. Highland type of distribution.

Arctic region. Midarctic—Superarctic zones.

Descends to 850 yards, or lower, in East Highlands.

Ascends to 1100 yards, in same province.

Range of mean annual temperature 39—36.

Native. Rupestral. If once really known to a botanist, the present very distinct species cannot be confounded with any other British species; and it might hence appear that it ought to form an exception to the difficulties and uncertainties which have arisen in the attempt to show the distribution of so many other species of this troublesome genus. Nevertheless, as will be observed, I have felt warranted in rejecting three out of the five provinces which have been recorded for Salix reticulata, under the impression that Salix herbacea had there been mistaken for the

present much rarer species. Those three provinces rest on old authority, not verified or confirmed by any good botanist of the present day, so far as I am aware; indeed, I know not that any living botanist has pretended to have found S. reticulata southward of the Highland provinces, with the sole exception of Mr. Joseph Sidebotham (Phytologist, ii. 316), on whose accuracy of statement in botanical matters I feel quite unable to place confidence, after reading his contributions to the Phytologist. I have seen S. reticulata in the counties of Perth, Forfar and Aberdeen. Professor Graham found it sparingly on Ben Hope, in Sutherland. Old authorities may be found quoted in the Botanist's Guides, for Cumberland, Westmoreland, York, and Caernarvon. In connexion with the last county, it would be curious to ascertain whether two localities published for Salix reticulata, on authority of Mr. Griffith, in the Botanist's Guide, do not both belong to Cotoneaster vulgaris; namely, those of Llandudno and Penmaen-mawr.

1027. SALIX HERBACEA, *Linn.*

Area * * * * * 6 7 * * 10 * 12 13 * 15 16 17 18.
South limit in Brecon, Caernarvon, York.
North limit in Orkney, Hebrides, Sutherland.
Estimate of provinces 9. Estimate of counties 20.
Latitude 52—60. Highland type of distribution.
Arctic region. Midarctic—Superarctic zones.
Descends to 500 yards, in North Isles (Orkney).
Ascends to 1400 or 1450 yards, in East Highlands.
Range of mean annual temperature 41—32.

Native. Ericetal, Rupestral. Although the English botanist naturally regards this as quite a "rare plant," it is one of the most abundant plants towards the summits of

nearly all the Highland mountains which exceed 700 or 800 yards in altitude, and is also plentiful at similar elevations on the rocky acclivities and by the streams of those which attain 1000 yards or upwards. In the province of East Highlands, the lower line of Salix herbacea may be considered to run between 700 and 800 yards, descending even below 700 yards in some few places; but the plant is seldom found plentifully before we have attained to 800 yards. In the West Highlands, as about the Ben Nevis group, we may take the lower line or limit at full 50 yards lower than in the East Highlands.* And in Orkney, the dwarf willow must grow as low as 500 yards, or thereabouts; since it is reported to occur on Hoy Hill, which is considered not quite 1600 feet of elevation. As it is stated to grow on Ingleborough, in Yorkshire, it must descend below 800 yards in England. Our British mountains are not sufficiently lofty to show the natural limit of Salix herbacea in an upward direction. It attains the summit of the highest mountains of Scotland, the bare and rocky top of Ben Nevis excepted; where the want of soil, and not the altitude merely, may be assigned as the cause of its absence. The only authority for this little shrub in South Wales is that of Mr. Jones, in Turner and Dillwyn's Guide; which it would be desirable to have confirmed, although the altitude of the Beacon of Brecon (950 yards) seems sufficient to give much probability to the record. The apparent absence of Salix herbacea from Shetland, where one hill is high enough to support the Azalea procumbens, is worthy of note in connexion with its abundance in Scotland, and its occurrence in Orkney, Faroe, &c.

SALIX PETIOLARIS, *Sm.*

Area [8 * * * * 13 * 15].

Incognit. I know not which of the British species of Salix is intended by authors under this name. Dr. Lindley says that the name does not belong to any British, or even to any European species. (See Hooker's British Flora, p. 308, edit. 5).

1028. MYRICA GALE, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.

South limit in Cornwall, Isle of Wight, Sussex.

North limit in Caithness, Sutherland.

Estimate of provinces 17. Estimate of counties 50.

Latitude 50—59. British type of distribution.

A. A. regions. Inferagrarian—Inferarctic zones.

Descends to the coast level, in the Peninsula.

Ascends to 600 yards, in East Highlands.

Range of mean annual temperature 52—40.

Native. Ericetal, Uliginal. Rather too widely distributed over England to allow of its being placed under the boreal or Scottish type; to which, nevertheless, its infrequency in the southern counties of England, compared with its frequency on the mountains and moors of Scotland and North England, brings it into near approximation. The entire absence of the Myrica from the three groups constituting the province of the North Isles is remarkable; because it seems adapted to humid situations, and will bear a colder climate than that of the North Isles. More usually the upper limit in Scotland is found at 450 to 500 yards, though occasionally so high as 550 or even 600 yards.

1029. PINUS SYLVESTRIS, *Linn.*

Area (1 2 3 4 5 * 7 8 9 10 11 12 13 14) 15 16 17 [18].
South limit in Perth. (Hants, Surrey, &c.)
North limit in Sutherland. [Orkney.]
Estimate of provinces 3. Estimate of counties 8.
Latitude 56—59. Scottish type of distribution.
A. A. regions. Superagrarian—Inferarctic zones.
Descends to the coast level, in the Highlands.
Ascends to 700 yards, or upwards, in East Highlands.
Range of mean annual temperature 47—40.

Native. Sylvestral, Ericetal. As a truly wild tree, the Pinus sylvestris seems limited to the Highland provinces in the present age. But the remains still to be seen in peat mosses, &c. clearly show that in former ages there were forests of this species in almost every province of Scotland and England, although it has since become extinct as a strictly natural production, while it is still frequent in plantations made for ornament or profit. On the sandy and gravelly heaths of Surrey, the Pine is even now quasi-spontaneous, propagating itself freely and plentifully by seed. But most of the young trees are evidently the progeny of the neighbouring planted trees; and all of them may possibly be the descendants of trees which were originally introduced to their present localities by the hand of man. Under this latter view, they cannot be pronounced genuinely native trees, although the species has become perfectly naturalized or re-naturalized in this part of England. There is likewise much uncertainty now in determining the true vertical as well as horizontal range of the species. Native trees occur at 600 yards and upwards on the moors of Aberdeenshire; and I have also seen

small scattered examples at 800 and even 850 yards of elevation, which might have been, and probably had been planted there, either for experiment or for effect in the landscape. But that the Pine has grown naturally on the Grampians at an equal elevation, in former ages, is rendered certain by the roots still remaining in the peat mosses of the elevated table lands of Forfar and Aberdeen, at 800 yards and upwards. Mr. Winch says that the roots and trunks of very large pines are still seen protruding from the black peat at an elevation of nearly 1000 yards in the north of England. I have seen a tree, apparently a native one, with a stem of eight feet in girth, at 550 yards of elevation in Aberdeenshire. The upper limit of the fir-woods on the ascent of Loch-na-gar, in the same county, is at about 650 yards, where the trees are two or three feet in girth. It will be understood that the census, latitude, &c. in the formula above, bear reference to the present distribution or existence of Pinus sylvestris, in a truly indigenous condition, which is a greatly restricted one. Mr. Woods states that the Pinus Pinaster propagates itself in the Poole basin, in the Channel province. (See Phytologist, iii. 261.)

1030. JUNIPERUS COMMUNIS, *Linn.*
1030, b. JUNIPERUS NANA, *Willd.*

Area general.
South limit in Somerset, Hants, Sussex, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 70.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to 100 yards, or lower, in Channel.

Ascends to 900 yards, in East Highlands.

Range of mean annual temperature 49—38.

Native. Ericetal, &c. Chiefly a shrub of the northern moors and mountains, which is uncommon in the southern provinces of England, except on the chalk hills. I am not prepared to show the distribution of J. nana apart from J. communis, either horizontally or vertically. The J. nana is said to occur in the counties of Caernarvon, Durham, Northumberland, Westmoreland or North Lancaster, Cumberland, Forfar, Argyle, Sutherland, Outer Hebrides, and Shetland; and it is probably limited to the Arctic region.

1031. TAXUS BACCATA, *Linn.*

1031, b. TAXUS FASTIGIATA, *Lindl.*

Area 1 2 3 4 5 6 7 8 (9) 10 11 12 (13 14) 15 16.

South limit in Dorset, Hants, Sussex, Kent.

North limit in Aberdeen, Argyle.

Estimate of provinces 14 Estimate of counties 40.

Latitude 50—58. British (?) type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 200 yards, more or less, in England.

Range of mean annual temperature 49—46.

Native. Sylvestral, Rupestral. The yew is clearly indigenous in England, and very probably so in Scotland likewise. But it appears to have been gradually becoming extinct in several of its native habitats, while it has also been extended into many of its present localities by the assistance of mankind. The northern limit is indicated in Argyle and Aberdeen, on the faith of Lightfoot and Dickie. The former, writing as an eye-witness, remarks that, at Glenure, near Glen Creran, in Upper Lorn, Argyle, there

are (1777) the remains of an old wood of the yew; and he farther observes that Glenure, in the Gaelic language, is no other than a corruption of Gleaniuir, that is, the Valley of yew trees. With reference to the trees of Aberdeenshire, Dr. Dickie writes in the Quarterly Journal of Agriculture, 1843, p. 18, that at Crathes [Crathie?] the yew trees are stated to be very fine, some of them growing in clefts of rocks, and all of natural growth, never having been planted in such situations. Taxus fastigiata would seem to be only a variety or permanent monstrosity of T. baccata, kept up by cultivation.

1032. GOODYERA REPENS, *Br.*

Area * [2 3] * * * * * * * [11 12] * * 15 16 17.
South limit in Perth, Forfar, Kincardine, Aberdeen.
North limit in Ross, West-Inverness, Moray, Banff.
Estimate of provinces 3. Estimate of counties 9.
Latitude 56—58. Scottish type of distribution.
Agrarian region. Midagrarian—Superagrarian zones.
Descends to the coast level, in East Highlands.
Ascends to 200 yards, more or less, in same province.
Range of mean annual temperature 47—45.

Native. Sylvestral. The eight counties above named are all those for which there appears sufficiently good authority; and I possess specimens from six of them; Perth and Ross being the exceptions in my herbarium. The counties of Sutherland and Argyle, hitherto imperfectly explored, seem likely enough, also, to warrant the addition of one of them to the estimated census. For the English provinces of Channels and Thames (see Flora Hertfordiensis), Tyne (see Winch's Flora), and Lakes (Hutton, in Botanist's Guide), the authorities are far too unsafe for re-

liance upon them. The Goodyera descends very little into the midagrarian zone; nor does it appear to be known in any spot of much elevation above the coast level.

1033. SPIRANTHES AUTUMNALIS, *Rich.*

Area 1 2 3 4 5 6 7 8 9 10 * 12.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Westmoreland, York.
Estimate of provinces 11. Estimate of counties 40.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 yards, more or less, in England.
Range of mean annual temperature 52—48.

Native. Pascual, &c. In nearly all the English counties, with the exception of some of those of Wales and of the two most northerly provinces of England. The Rev. George Pinder has lately discovered this species within the province of the Lakes, finding it at Silverdale and Arnside.

1034. SPIRANTHES ÆSTIVALIS, *Rich.*

Area * 2.
South limit in Hants.
North limit in the same county.
Estimate of provinces 1. Estimate of counties 1.
Latitude 50—51. Local (Engl.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends nearly to the coast level?

Ascends to 50 yards, less or more.

Range of mean annual temperature (about) 51—50.

Native. Uliginal? Discovered by Mr. Janson, in August, 1840, "near Lyndhurst" or "between Lyndhurst and Christchurch," in the New Forest, Hampshire. I am not aware of its discovery in any second locality in England; but it occurs in Jersey, according to Babington.

1035. SPIRANTHES CERNUA, *Rich.*

Hibernian. This, the Neottia gemmipara of Smith, had been known several years as a very local plant of Ireland, not identified with any described species. In a paper published in the Linnean Transactions, vol. 19, Mr. C. C. Babington stated its identity with the Ophrys cernua of Linnæus; which, however, I am informed by Sir William Hooker, was a view first suggested to Mr. Babington by Sir William himself, when he showed Drummond's specimens to that gentleman at Kew. But it is a matter of less moment to the botanical world, from whose mind the idea of this identity really originated, than the establishing of it as a fact, which Mr. Babington has done, apparently, on full and careful comparison of the plants and their descriptions.

1036. NEOTTIA NIDUS-AVIS, *Rich.*

Area 1 5 3 4 5 6 7 8 * 10 11 12 13 14 15 16.

South limit in Somerset, Dorset, Isle of Wight, Kent.

North limit in Moray, Forfar, Argyle.

Estimate of provinces 16. Estimate of counties 50.

Latitude 50—58. British (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in Peninsula or Channel.
Ascends to 200 yards, in East Highlands.
Range of mean annual temperature 51—45.

Native. Sylvestral, (Parasitic ?). Intermediate between the English and British types of distribution; approximating to the latter, in its latitudinal area; but inclining towards the English type also, by its greater frequency in England, as well as by its apparent absence from the two most northerly provinces of Scotland.

1037. LISTERA CORDATA, *Br.*

Area 1 * * * 5 * 7 8 9 10 11 12 13 14 15 16 17 18.
South limit in Devon, Somerset, Salop, Derby.
North limit in Orkney, Sutherland.
Estimate of provinces 14. Estimate of counties 40.
Latitude 51—60. Scottish type of distribution.
A. A. regions. Midagrarian—Midarctic zones.
Descends to 200 yards, or lower, in the Peninsula.
Ascends to 850 yards, in East Highlands.
Range of mean annual temperature 48—39.

Native. Ericetal, Uliginal. The great rarity of this species to the southward of the latitudinal line of 53, contrasted with its frequency on the northern moors, particularly those of the Highland provinces, clearly connects it with the Scottish type of distribution, notwithstanding its occurrence so far south as the Peninsula, in two counties of which it has lately been discovered; namely, in Devon, by Mr. Ward, and in Somerset, by the Rev. W. H. Coleman. Mr. Ward found it on Coddon Hill, near Barnstaple, which I suppose to be about 600 feet in height,

Mr. Coleman's habitat for the plant, in Somerset, is more elevated, being "near the summit of Dunkery, a hill of 1668 feet, about seven miles south-west from Dunster." In Shropshire, it occurs on the Stiperstones Hill. The localities in the provinces of North Wales, Trent, and Mersey, are on hills or elevated ground. Some of those in Yorkshire, perhaps, may not be 100 yards above the sea-level. Coddon Hill can scarcely be considered to exceed the inferagrarian zone. My notes of localities indicate authorities for the occurrence of this species in 34 counties, and it will probably be found in some few others, for which I find no records at present, as Shetland, Hebrides, Caithness, Dumbarton, &c.

1038. LISTERA OVATA, *Br.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Devon, Isle of Wight, Kent.
North limit in Sutherland, Ross.
Estimate of provinces 17. Estimate of counties 75.
Latitude 50—59. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 yards, in the East Highlands.
Range of mean annual temperature 52—43.

Native. Sylvestral. Possibly the estimate of 75 counmay be a step too high in the scale; but it is difficult to select half-a-dozen, from which this species is likely to be quite absent. Devon is named in the "south limit," from the want of any record of the plant for Cornwall; but I have seen it in the extreme west of Devon, if not actually within Cornwall.

1039. EPIPACTIS LATIFOLIA, *Sw.*
1039, b. EPIPACTIS MEDIA, *Fries.*
1039, c. EPIPACTIS PURPURATA, *Sm.*
1039, d. EPIPACTIS OVALIS, *Bab.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 * 17.
South limit in Devon, Isle of Wight, Kent.
North limit in Sutherland, Ross, Moray.
Estimate of provinces 17. Estimate of counties 60.
Latitude 50—59. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 200 yards, more or less, in England.
Range of mean annual temperature 51—46.

Native. Sylvestral. The plants intended by authors under the three first of the above four names, are not known to me as distinct or clearly distinguished species; and I find it impossible to apply many of the recorded localities rightly to the different forms. They are, therefore, unavoidably treated in the aggregate at present. I suppose Mr. Babington correct in separating the E. ovalis as a distinct species; and could wish that I was equally able to separate correctly its special localities from those of "E. latifolia," usually so designated, and even from those of "E. rubra," to which latter plant the localities of E. ovalis have been occasionally assigned. The neighbourhood of Settle, in the West of Yorkshire, has become familiar to English botanists, as the chief locality of E. ovalis, by the numerous specimens so liberally distributed by Mr. Tatham. In 1832, I gathered Epipactis latifolia, as I then deemed it, on limestone rocks, by Loch Errboll, in Sutherland; but the specimen in my herbarium appears

to be E. ovalis; which I think is the case also with one sent to me from Norfolk, by Miss Bell. Mr. James Backhouse has reported E. ovalis in Westmoreland; as, indeed, had been before done by Mr. Crowe, in English Flora. Perhaps the Epipactis of the Ormeshead, recorded by the Rev. A. Bloxam and the late Mr. J. E. Bowman, in the New Botanist's Guide, may likewise be referred to E. ovalis. Assuming these suggestions correct, E. ovalis occurs in provinces 4, 7, 10, 12, 17; and may be expected in others. It may also rise above 200 yards of elevation in Yorkshire. The E. media (or purpurata) has been reported in Sussex, Kent, Surrey, Herts, Essex, Bedford, Northampton, Worcester, Salop, Derby, York, Cumberland, and Linlithgow; that is, in provinces 2, 3, 4, 5, 8, 10, 12, 14. But it is very dubious whether the E. purpurata (of Smith) is correctly referred to the E. media (of Fries) in Babington's Manual; on which, see the remarks in Flora Hertfordiensis, p. 295.

1040. Epipactis palustris, *Sw.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 * 14 15 16.
South limit in Devon, Isle of Wight, Kent.
North limit in the Isle of Skye (Lightfoot), Fife.
Estimate of provinces 15. Estimate of counties 50.
Latitude 50—58. English type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—46.

Native. Uliginal. A scarce plant in Scotland, and not at all common in England. It is already recorded from 40 counties, and may likely occur in some few others, but

will scarcely attain the next step in the comital estimate, that of 50. It is somewhat remarkable that this species should have been found in the Isle of Skye, and not elsewhere on the western side of Scotland; thus leaving a wide space between Lightfoot's locality and the Lake province in England.

1041. EPIPACTIS GRANDIFLORA, *Gaud.*

Area 1 2 3 4 5 * * 8 * * * 12 * * 15 16.
South limit in Somerset, Dorset, Wight, Kent.
North limit in North Argyle, Perth, Arran.
Estimate of provinces 9. Estimate of counties 25.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Channel.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Sylvestral. I have seen no specimens of this species from any province northward of the Severn. The four more northerly provinces are reported on authority too good to be rejected, while verification would be highly desirable in each case. They include five or six counties; namely, Nottingham (Flo. Nott.), Derby (Mr. Coke, in B. G.), North Lancashire (Aiton, in Jopling's Furness and Cartmell), Westmoreland (Lawson, quoted in E. F.), Perth (D. Don, in Hook. Scot.), Arran (Lightf. Scot.), and Appin, Argyle (Carmichael, in Hook. Scot.). These more northerly habitats, or some of them, may perhaps belong to E. ensifolia, if the two are really distinct species. For the present, however, I feel obliged to adopt them here on the credit of the authorities cited, and to draw up the formula of distribution in accordance. The locality of Appin verges on the superagrarian zone.

1042. EPIPACTIS ENSIFOLIA, *Sw.*

Area * 2 3 * 5 * 7 8 * 10 11 12 * 14 15 16.
South limit in Wilts, Hants, Sussex, Kent.
North limit in Perth, Fife, Edinburgh, Arran.
Estimate of provinces 11. Estimate of counties 20.
Latitude 51—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, or nearly so, in Channel.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 50—47.

Native. Sylvestral. There can be no doubt about the occurrence of this species northward into Fife, and southward into Hants. But the localities of Methven Wood, in Perth, and the Isle of Arran, are assigned, by different observers, one while to E. grandiflora, one while to E. ensifolia. This circumstance tends to strengthen the suspicion intimated in treating the preceding species, that some confusion or mis-naming of the plants has occurred. On looking to the line of nos. which indicate the "Area" of the present species, it appears to be scattered too irregularly for reference to any one of our six types very strictly understood.

1043. EPIPACTIS RUBRA, *Sw.*

Area 1 * * 4 5 * [7 * * 10].
South limit in Somerset? Gloucester.
North limit in Huntingdon?
Estimate of provinces 3. Estimate of counties 3.
Latitude 51—53. Local (Engl.) type of distribution.

Agrarian region. Inferagrarian zone.
Descends to —— ?
Ascends to ——— ? (Altitude trifling).
Range of mean annual temperature, say 49.

Native. Pascual ? An extremely rare plant which has been seen by very few English botanists. The Rev. J. C. Collins found a single specimen on Quantock hills, in Somerset, in 1836, as recorded in the New Botanist's Guide. Mr. Woodward stated in the original Botanist's Guide, that he was in possession of a specimen "exactly corresponding with Smith's description," and marked "Ripton, Huntingdonshire." To these two habitats we must add the original one of Smith, "on a steep stony bank, sloping to the south, on Hampton Common, Gloucestershire. In the New Botanist's Guide the name of E. rubra was applied interrogatively to the Epipactis of Giggleswick, in Yorkshire, and the Ormeshead, in Caernarvonshire; but E. ovalis is the plant of the former locality, and probably of the latter also.

1044. CORALLORHIZA INNATA, *Br.*

Area * * * * * * * * * * * * 13 14 15 * 17.
South limit in Ayr, Edinburgh.
North limit in Ross, Moray.
Estimate of provinces 4. Estimate of counties 7.
Latitude 55—58. Scottish type of distribution.
Agrarian region. Midagrarian—Superagrarian zone.
Descends to the coast level, in East Highlands.
Ascends to 100 or 200 yards, in Scotland.
Range of mean annual temperature 48—46.

Native. Uliginal, Sylvestral. A scarce plant, found in the counties of Fife, Perth, and Forfar, in addition to the

four others named above. It is not unlikely to be discovered in some of the counties adjacent to those mentioned; but not so very likely as to warrant an increase in the comital estimate; especially since it may have become extinct in Perthshire, except in that small detached portion of the county, situate between Clackmannan and the Firth of Forth, and thus being physically a part of Fifeshire rather than of Perthshire.

1045. ORCHIS MORIO, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * * [14 * * * 18].
South limit in Devon, Isle of Wight, Kent.
North limit in Northumberland, Lancaster.
Estimate of provinces 11. Estimate of counties 40.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Pascual. Included in Lowe's list of Orkney plants, and was also reported to grow on the Pentland Hills, Edinburgh; but neither of these Scottish habitats appears to have been verified. Possibly it may be sufficiently general in the English counties to bring the true census nearer to 50 than to 40; although the recorded facts will not at present warrant the higher estimate. This is by much the most frequent species of its order in the county of Surrey, and probably the same holds true for many of the southern counties; and yet, with reference to Britain in general, it must be classed among the rarer plants of our island.

1046. ORCHIS MASCULA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, ———?
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 500 or 600 yards, in the Lake province.
Range of mean annual temperature 52—43.

Native. Pratal. Not unlikely to exist in every county, although the present state of our information may not warrant the highest estimate. This species is not enumerated in Balfour and Babington's list of plants observed in the Hebrides. Neither does it occur in Professor Balfour's catalogue of species seen in Islay and Cantire. And I have no note of ever meeting with it myself in the Highland counties. But it usually appears in lists made by resident botanists, who see the earlier plants, equally as those later flowering species which are more likely to come under the observation of tourists. Hence, the absence of any record of this species for the counties of Perth, Argyle, West Inverness, Sutherland, Caithness, and Hebrides, in my collected lists, may be attributed to the early flowering of the plant, before the season of tourist-botanists.

1047. ORCHIS LAXIFLORA, *Lam.*

Sarnian. Occurs in "wet meadows and bogs in Jersey and Guernsey" (Bab. Man.); but does not appear to have been certainly found in any part of England.

1048. ORCHIS USTULATA, *Linn.*

Area 1 2 3 4 5 * * 8 9 10 11 [12].
South limit in Devon, Isle of Wight, Kent.
North limit in Durham, Lancaster. [Cumberland ?]
Estimate of provinces 9. Estimate of counties 30.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in Peninsula or Channel.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—48.
Native. Pascual. Three localities for this species, in the county of Cumberland, are copied into the Botanist's Guide; but as they stand upon old and not safe authority, without subsequent verification, it seems better to exclude the Lake province from the area, at least for the present.

1049. ORCHIS MILITARIS, *Linn.*
1049, b. ORCHIS FUSCA, *Jacq.*
1049, c. ORCHIS MACRA. *Lindl.*

Area * 2 3.
South limit in Berks, Sussex, Kent.
North limit in Oxon, Bucks, Herts, Middlesex.
Estimate of provinces 2. Estimate of counties 7.
Latitude 51—52. Germanic type of distribution.
Agrarian region. Inferagrarian—zone.
Descends to the coast level, or nearly so, in Thames.
Ascends to 100 yards, more or less, in England.
Range of mean annual temperature 49—48.
Native. Sylvestral, Pascual. Whether one, two, or

three species are included under the above three names I feel unable to say with any confidence; and as localities both of fusca and of macra have probably been placed on record under the name of militaris, it becomes very difficult to show the exact distribution of each one apart from the other two. O. fusca is well known to grow in Kent, and the Rev. G. E. Smith marked it also as a plant of West Sussex, in a list of British plants which that accurately-observing botanist some years ago obliged me by checking for the counties of Kent and Sussex. The O. macra is said to occur in Kent, Berks, and Oxford. The O. militaris has been recorded in Kent, Berks, Oxford, Bucks, Hertford, and Middlesex; but the first and last of these six counties will require verification.

1050. ORCHIS HIRCINA, *Scop.*

Area * * 3 * * * * [8 * * * 12].
South limit in Kent, Surrey?
North limit in the same counties.
Estimate of provinces 1. Estimate of counties 1.
Latitude 51—52. Local (Germ.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to 50 yards, less or more.
Ascends to 100 yards, more or less.
Range of mean annual temperature, say 49.

Native or Extinct? Sylvestral? Though formerly found in Kent, by various botanists, this conspicuous species has been so often sought unsuccessfully in the same localities of late years, as to lead to an inference that it has become nearly or quite extinct. Whether found in Surrey, at Box Hill, or elsewhere, appears much more dubious. The counties of Nottingham (Deering) and Cumberland

(Hutton) may be rejected. Some other and yet unpublished habitats have been communicated to me, but further inquiry has shown them to belong to Habenaria bifolia or chlorantha, mistaken for O. hircina.

1051. ORCHIS PYRAMIDALIS, *Linn.*

Area 1 2 3 4 5 6 7 8 * 10 11 * 13 * 15 16.
South limit in Devon, Isle of Wight, Kent.
North limit in Fife, Colonsay;—Northumberland, Wigton.
Estimate of provinces 13. Estimate of counties 40.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 200 yards, more or less, in England.
Range of mean annual temperature 52—48.

Native. Pascual, &c. This species, like O. ustulata and some other of the Orchidaceæ, appears to offer an indisputable array of facts in confirmation of the views of those botanists who believe that the mineralogical or chemical nature of the soil and subjacent rocks exerts a decided influence on the vegetation, and even on the flora, which is produced thereon; its abundance on chalk, lias, and mountain limestones, in many parts of England, with its entire absence or great rarity in the intermediate tracts where limestone is not found, can be accounted for only by reference to the nature of the soil. A so-called chalk or limestone plant, restricted to a county or two, may be only a very local one which happens to grow on limestone or chalk; but a species which appears and disappears repeatedly, as we cross a long extent of country, in accordance with the presence or absence of carbonate of lime in some state, is otherwise situate, and forces any reasoning observer

to suppose a connexion between the two series of facts. And yet we still find good botanical observers, feeble in the faculty of reasoning, who deny any connexion between the soil and vegetation, other than one depending upon the mechanical characters of the former, such as its state of adhesion or porosity.

1052. ORCHIS LATIFOLIA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 yards, in East Highlands.
Range of mean annual temperature 52—43.

Native. Uliginal, &c. It would not be easy to select any counties from which this species will be found wholly absent, although rather a scarce plant in several; and the estimate has consequently been made to include all. Yet there seems something false or anomalous in thus placing Orchis latifolia in the same class of frequency as the Bellis or the Montia, which are so much more general and abundant. The anomaly would disappear, however, if we could take a census on a more minute and numerous division of Britain, than that into 82 counties. Suppose each county subdivided into ten sections, the Bellis or the Montia would be found in far more of the 820 sections than would the Orchis latifolia.

1053. ORCHIS MACULATA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Hebrides, ——— ?
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 1000 yards, in the East Highlands.
Range of mean annual temperature 52—37.
Native. Paludal, Ericetal, &c. The most widely distributed species of the genus in Britain; and though much less plentiful than O. Morio or O. mascula in the southern provinces, it is probably the commonest of the species in a general view of Britain. It is not named in the lists of plants for Orkney or the Isle of Man, but may be the species entered as "O. Morio" in Lowe's list of Orkney plants.

1054. GYMNADENIA CONOPSEA, *Br.*

Area general?
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Caithness.
Estimate of provinces 18. Estimate of counties 75.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 700 yards, in the East Highlands.
Range of mean annual temperature 52—40.
Native. Pratal, Ericetal, &c. I am obliged to give the

"general" area only interrogatively, from not being aware of any authority for this species in South Wales; while the occurrence of it in the adjacent counties of the Severn and North Wales provinces renders its presence in that of South Wales also extremely probable. A second species, G. odoratissima (Rich.), has been supposed to occur in the south of England; but some error may have arisen through the circumstance of G. Conopsea differing much in scent according to soil or humidity. See the remarks on this peculiarity by Mr. Joseph Woods, in the Phytologist, iii. 262. My reference to the published suggestion about the occurrence of G. odoratissima is unfortunately lost.

1055. HABENARIA BIFOLIA, *Br.*
1055, b. HABENARIA CHLORANTHA, *Bab.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Sutherland, Ross.
Estimate of provinces 17. Estimate of counties 75.
Latitude 50—59. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 yards, in East Highlands.
Range of mean annual temperature 52—43.

Native. Ericetal, Sylvestral. These two alleged species having been usually recorded as one, under the joint name of O. bifolia, only some of the recently published localities can be confidently assigned to either species apart from the other. Thus, as in many similar instances, their distribution can only be treated in connexion, because founded upon the united records, not of the last very few years, but of the last and present century. H. chlorantha

(apart from H. bifolia) is reported from provinces 1 2 3 4 5 6 * 8 * 10 11 * 13 14 * 16. And, on the other side, H. bifolia (apart from H. chlorantha) is recorded for provinces 2 3 4 * * 7 8 * * * * * 14 * 16. Probably each is scattered generally through Britain, with the exception of the North Isles, from which neither of them appears to have been hitherto reported.

1056. HABENARIA VIRIDIS, *Br.*

Area general.
South limit in Somerset, Dorset, Wight, Kent.
North limit in Shetland, Hebrides, Sutherland.
Estimate of provinces 18. Estimate of counties 70.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midartic zones.
Descends to the coast level, or nearly so, in Peninsula.
Ascends to 850 yards, in the East Highlands.
Range of mean annual temperature 50—38.

Native. Pascual, Ericetal. So scarce a plant in England, especially in the southern provinces, as almost to warrant the assignment of it to the Scottish type, rather than the British; notwithstanding the generality of its area, when tested by provinces. I have seen it, or it has been reported by other botanists, altogether in about 56 counties. Among the remaining 26 counties, several appear so very likely to produce it (Orkney, Caithness, Stirling, &c. &c.) that I cannot place the estimate so low as 60; and possibly 75 might have come nearer the reality than 70.

1057. HABENARIA ALBIDA, *Br.*

Area [* 2 * 4 5] 6 7 * 9 10 11 12 13 * 15 16 17 18.
South limit in Cardigan, York, ——?
North limit in Shetland, Orkney.
Estimate of provinces 12. Estimate of counties 30.
Latitude 52—61. Scottish type of distribution.
A. A. regions. Midagrarian—Inferarctic zones.
Descends to the coast level, in West Highlands.
Ascends to 600 or 650 yards, in East Highlands.
Range of mean annual temperature 47—40.

Native. Pascual, Ericetal. Reported from the counties of Hants (Rev. S. Palmer), Northampton (Merrett, in B. G.), Worcester (Mr. Lees; Scott, in Hast. Illust.), Stafford (Anonymous, in Garner N. H. S.), and Salop (Dr. G. Lloyd, in Flora Shrops.); all of which appear to require verification; and, possibly, in some of the more northern counties than those mentioned, localities of H. bifolia may have been published under name of H. albida. One province has been added in the estimate, on the likelihood of the plant being found in the East Highland or Trent province, if not really existent in that of Severn.

1058. ACERAS ANTHROPOPHORA, *Br.*

Area * * 3 4 * * * 8 * [10].
South limit in Kent, Surrey, Berks.
North limit in York? Lincoln, Northampton.
Estimate of provinces 3. Estimate of counties 9.
Latitude 51—54. Germanic type of distribution.
Agrarian region. Inferagrarian zone.

Descends to the coast level, or nearly so, in Ouse.
Ascends to 100 yards, more or less, in Thames.
Range of mean annual temperature 49—48.

Native. Sylvestral, &c. Long known as a native of the provinces of Thames and Ouse. Other more northerly habitats have lately been reported in those of Trent and Humber. By Mr. T. V. Wollaston (Phytologist i. 523) it has been found "plentiful in Gate Burton Wood," Lincolnshire; and it is reported to have been discovered by Mrs. Broadrick, in Hampole Wood, near Doncaster, Yorkshire. While it would be satisfactory to me to obtain a verification of this report, indirectly conveyed, and probably unpublished, the alleged habitat near Doncaster does not appear so unlikely as to warrant its rejection without inquiry; although, for the present, I prefer to hold it uncertain.

1059. HERMINIUM MONORCHIS, *Br.*

Area 1 2 3 4 5 * * * * [10 * 12].
South limit in N.E. Somerset, Hants, Sussex, Kent.
North limit in Norfolk, Cambridge, Gloucester.
Estimate of provinces 5. Estimate of counties 15.
Latitude 50—53. Germanic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, or nearly so, in Channel.
Ascends to 100 yards, more or less, in England.
Range of mean annual temperature 50—48.

Native. Pascual, &c. Known in several counties of the Channel, Thames, and Ouse provinces. Very local in the Peninsula, and perhaps only to be found in the vicinity of Bath. Almost equally local in the province of the Severn, where it is said to occur about the Cotteswolds in Gloucestershire, that is, near the inland or eastern border

of that sub-westerly province. A dubious habitat in the province of Humber is mentioned in the New Botanist's Guide. In Jopling's Sketch of Furness and Cartmell, which includes a list of plants and their localities, on the authority of Mr. Aiton, this species is mentioned as being found about Newby Bridge and Humphrey Head, in the Lake province.

1060. OPHRYS APIFERA, *Huds.*

Area 1 2 3 4 5 6 7 8 * 10 11.
South limit in Devon, Isle of Wight, Kent.
North limit in Durham, York, Denbigh.
Estimate of provinces 10. Estimate of counties 35.
Latitude 50—55. Germanic type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 200 yards, more or less, in England.
Range of mean annual temperature 52—47.

Native. Pascual, &c. This is an example of an eastern species running so far westward as almost to pass from the Germanic into the English type. Still, the eastern tendency is very apparent, by the absence of the species from the provinces of the Lakes and Mersey, and by its restriction to single counties each, Glamorgan and Denbigh, in the provinces of North and South Wales, so far as our records go. It appears to be also absent from the western half of the Peninsula; occurring only in South Devon and Somerset. Reported from all the seven counties of the Severn province. The very obvious tendency of this species to calcareous ground, like the others of its genus, may go farther to account for its eastern distribution, than the quality of the climate or the geographical position.

1060, b. OPHRYS ARACHNITES, *Rich.*

Area [* 2] 3 [4].
South limit in Kent, Surrey.
North limit in the same counties.
Estimate of provinces 1. Estimate of counties 2.
Latitude 51—52. Local (Germ.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, or nearly so.
Ascends to 100 yards, more or less.
Range of mean annual temperature 51—49.

Native. Pascual. Either overlooked as a form of O. apifera, or very local in England. It grows in Kent and Surrey, on the report of the Rev. G. E. Smith, by whom it was first distinguished from O. apifera in England. In Salter's Botany of Poole, it is marked as occurring within 30, but not within 16 miles of that town. This habitat might be within either Dorset or Hants, and will require some more direct and individual authority, or more exact specification, before it can be received as a certain one. In the New Botanist's Guide, a reference is given to English Flora, as an authority for the occurrence of this plant near Bury, in Suffolk; but there seems to be some error either in printing the wrong specific name, or in giving the wrong authority. Very doubtful whether O. arachnites is truly a distinct species.

1061. OPHRYS ARANIFERA, *Huds.*
1061, b. OPHRYS FUCIFERA, *Sm.*

Area 1 2 3 4 [5 * * 8] * 10.
South limit in Sussex, Kent.

North limit in York, Northampton, Cambridge.
Estimate of provinces 5. Estimate of counties 10.
Latitude 50—54. Germanic type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in Thames or Channel.
Ascends to 100 yards, less or more, in same provinces.
Range of mean annual temperature 51—48.

Native. Pascual, &c. A scarce species; which has not been quite satisfactorily shown to grow in any province beyond those of the Channel, Thames, and Ouse. It has long been recorded as found in the neighbourhood of York; but the old records continue to be repeated, without the support of any additional authority which can be safely relied upon. In Turner and Dillwyn's Botanist's Guide, it is included in both the Lincolnshire and Northamptonshire lists, on faith of the same habitat, "a mile from Barneck." In the Flora of Shropshire it is admitted on the authority of Mr. H. Spare, who does not appear to have shown any specimen of it to the author of the Flora, and whose name is appended as the authority for some other much-to-be-suspected species in that county. In the Supplement to the Flora Bathoniensis, the name of a late Mr. J. Jelly is cited as the authority for O. aranifera, on "dry hills above Winsley." In this, as in various other instances, it is to be regretted that the author of the Bath Flora, relating only to a small space of country, should not himself have done more towards verifying or correcting the localities which he published on indifferent authority and for unlikely plants. Not a few errors are probably in print respecting the plants of Bath and Bristol. O. fucifera occurs in Kent; but it would seem to be merely a variety of O. aranifera.

1062. OPHRYS MUSCIFERA, *Huds.*

Area 1 2 3 4 5 * 7 8 * 10 11 12.
South limit in Somerset, Dorset, Isle of Wight, Kent.
North limit in North Lancaster, Westmoreland, Durham.
Estimate of provinces 10. Estimate of counties 30.
Latitude 50—55. Germanic type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, or nearly so, in Thames.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—48.
Native. Sylvestral, Pascual. In referring this species to the Germanic type of distribution, we are met with the exceptional case of a few decidedly western localities, as well as several sub-western. For instance, two localities are mentioned in the Flora of Anglesea (Welsh Botanology), and these appear to be the only habitats in Wales. It is found in some counties of the Severn province, although more sparingly than the O. apifera. In the Peninsula, it would seem to be limited to Somerset. Some verification of the Lake province would be satisfactory; while the species is not so unlikely to be found there as to warrant the rejection of the authorities on which it has been recorded for that province.

1063. MALAXIS PALUDOSA, *Sw.*

Area 1 2 3 4 5 * 7 * 9 10 11 12 13 * 15 16 17.
South limit in Devon, Hants, Sussex, Kent.
North limit in Sutherland, Ross.
Estimate of provinces 15. Estimate of counties 40.
Latitude 50—59. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in Thames or Channel.
Ascends to 400 yards, or upwards, in East Highlands.
Range of mean annual temperature 50—43.

Native. Paludal, Uliginal. A scarce species with reference to its wide area; although doubtless rendered apparently more scarce than the reality, through its diminutive size causing it to be overlooked. I have not seen it at a greater elevation than 300 yards; but the locality mentioned in the Flora of Forfarshire "on the side of the hill above the Kirkton of Clova," seems to imply a greater altitude. A specimen is in my herbarium, from the Botanical Society of Edinburgh, collected by Mr. J. H. Pollexfen, at "Loch Brandy, Aberdeenshire." If this intend Loch Brandy, above Kirkton, in Glen Clova, Forfarshire, the altitude of 400 yards is probably exceeded. The Malaxis has been recorded for thirty counties, or upwards; and though drainage may have destroyed it in some of its published localities, the estimate of 40 counties is not likely to be too high.

1064. LIPARIS LOESELII, *Rich.*

Area * * 3 4.
South limit in Kent? Suffolk? Cambridge.
North limit in Norfolk, Cambridge, Huntingdon.
Estimate of provinces 2. Estimate of counties 5.
Latitude 51—53. Germanic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Thames or Ouse.
Ascends very little above the coast level.
Range of mean annual temperature 50—48.

Native. Uliginal. Doubtful whether this plant can

now be correctly said to grow in more than one single province and three counties; although there would seem no grounds for distrusting the records of its former occurrence in Kent and Suffolk. The Rev. M. J. Berkeley finds it at Whittlesea Mere, which is in the county of Huntingdon; and authorities for the other counties may be seen in the Botanist's Guides.

1065. CYPRIPEDIUM CALCEOLUS, *Linn.*

Area [* * * * 5 * * * *] 10 11 12.
South limit in York.
North limit in Durham? North Lancashire?
Estimate of provinces 3. Estimate of counties 3.
Latitude 54—55. Local (Scot.) type of distribution.
Agrarian region. Superagrarian zone?
Descends to ——— ? (100 yards?)
Ascends to ——— ? (formerly to 200 or 300 yards?)
Range of mean annual temperature, say 47—46.

Native. Sylvestral. Gradually becoming extinct, or extirpated, in Britain. Mr. G. S. Gibson (Phytologist, ii. 373) says that a wild specimen was obtained in a woody 'glen, three miles from Helmsley, in Yorkshire, in 1844; and Mr. Tatham kindly furnished my herbarium with a garden-grown specimen, the root of which had originally been brought from Hesletine Gill, about nine miles above Settle, in the same county. Forty years ago (1797) it was to be found in the county of Durham, according to Winch. In Jopling's Sketch of Furness and Cartmell, the Cypripedium is stated to have been found in the north-west of High Furness; but whether still in existence there, is not clear. Northumberland and Gloucestershire have also been recorded to produce it; but it has been long extinct, if ever existent, in those counties.

1066. IRIS FŒTIDISSIMA, *Linn.*

Area 1 2 3 4 5 6 7 8 * 10 11 * * (14 15).
South limit in Cornwall, Isle of Wight, Kent.
North limit in Durham, Anglesea, Denbigh.
Estimate of provinces 10. Estimate of counties 30.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 yards, or upwards, in England.
Range of mean annual temperature 52—48.

Native. Sylvestral, &c. Abundant in many places in the southern provinces; scarce or local in the northern provinces of England; and though Dr. Robert Graham recorded the species as having been found in the counties of Edinburgh and Fife, by other botanists, this was done under a scarcely veiled distrust. The Catalogue of the Edinburgh Botanical Society gives the species as very rare and doubtfully native in their circuit.

1067. IRIS PSEUDACORUS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 150 yards, in the East Highlands.
Range of mean annual temperature 52—45.

Native. Paludal. This species is far too familiar and frequent to have had its special localities placed on record; and it is so conspicuous as scarcely to admit of being overlooked by the makers of local lists and floras. On adding to my own private notes of places in which it has been seen, all the data afforded by the lists and floras, I find that there still remain fifteen counties in which it has not been ascertained to grow; although I cannot doubt that it would be found in all of those counties if it were looked for; and doubtless it is known to resident botanists in several of them. Ten of the counties in question are situate in Wales and the Lowlands.

IRIS TUBEROSA, *Linn.*

Area (1).

Alien. Established through cultivation in several spots about Penzance, in Cornwall; chiefly or solely in and about old gardens and orchards. See Mag. Nat. Hist. ix. 205. Phytologist, ii. 679, 680; and also iii. 104. Eng. Bot. Supp. 2818. The same species is likewise said to occur near Cork.

IRIS XIPHIOIDES, *Ehrh.*

Area (6 and 15).

Alien. In Dillwyn's Materials for a Fauna and Flora of Swansea, this species is stated to have grown in Glamorganshire, "at Gelly Evan, near Penllergare, along with Iris fœtidissima, for upwards of forty years." And G. Don said that he discovered it in the year 1810, in a marsh near Colonel Kinloch's of Logie, growing among carices and junci, in a situation where it had never been cultivated.

IRIS XIPHIUM has been reported to grow in Worcestershire. (Nash, quoted in B. G.). IRIS PUMILA is found "apparently indigenous in Chartley meadows," Leicestershire. (Miss Kirby, in Phytologist, iii. 179). And IRIS GERMANICA grows in Staffordshire, "about a ditch in Stoke meadows, introduced." (Garner's Natural History of Staffordshire.) It seems not worth while to mention each of these species under a distinct head.

1067*. SISYRINCHIUM ANCEPS, *Lam.*

Hibernian. This was quite an unexpected discovery in Ireland; although not the first American species which had been found there, and not elsewhere in Europe, unless by introduction. Whether truly an aboriginal native, or simply naturalized in Ireland, has not been yet quite clearly shown or stated by its discoverer, Mr. Lynam. The locality has been variously described, and is "near Woodford, Loughrea, county of Galway." (Phytologist, ii. 765).

1068. TRICHONEMA COLUMNÆ, *Reichb.*

Area 1.
South limit in Devon.
North limit in the same county.
Estimate of provinces 1. Estimate of counties 1.
Latitude 50—51. Local (Atl.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level?
Ascends scarcely above the coast level?
Range of mean annual temperature 52—51.
Native. Glareal. Known in one locality only, which

is described by Mr. John Milford, in the Magazine of Natural History, vii. p. 272: "Grows wild, in great abundance, among turf, in a dry sandy soil, on the Warren, a sandy tract between Dawlish and Exmouth, Devonshire. The exact spot is on the left of the old road from Exeter to Dawlish, before ascending the hill to Mount Pleasant, and almost in front of the small cottages there: it extends at intervals to the Ferry." My herbarium has been supplied with a specimen from the Warren, by Sir W. C. Trevelyan. The same species has been lately sent to me by Mr. Hunt, from the island of St. Michael, Azores. Possibly, the Devonian locality may have originated from that Western Isle.

1069. Crocus vernus, *Willd.*

Area (* 2 3 4 5 * 7 8 9 10 * 12).

Alien. Recorded from various counties, as may be seen by the number of provinces above indicated; but it appears to have been only a temporary straggler from cultivation, in most of them. There are some habitats, however, of many years' standing; as at Hornsea, in Middlesex; at Harlestone, in Norfolk; in the meadows by the county town, in Nottinghamshire. Notwithstanding the different seasons of flowering, it would seem that some confusion has occurred in reporting the localities of C. vernus and C. nudiflorus respectively.

1070. Crocus nudiflorus, *Sm.*

Area (5 * * 8 9 10).

Alien? This species, the C. speciosus of some English

authors, has most the appearance of nativity in England, although there seems not sufficient ground for raising it into the class of natives or even of denizens. It is recorded as now or recently growing wild in the counties of Warwick, Stafford, Salop, Nottingham, Derby, Chester (near Warrington), Lancaster, and York.

CROCUS SATIVUS, *Linn.*

Area [3 4 * * 7 8].

Incognit. This is said to have been formerly cultivated about Saffron Walden, in Essex; and it has likewise been observed, or supposed to have been observed, in the counties of Cambridge, Anglesea, and Derby. Probably C. nudiflorus was thus misnamed in Derbyshire, if not in Anglesea also. It does not appear that C. sativus has been seen in any of these counties for upwards of half a century past.

CROCUS AUREUS, *Sibth.*
CROCUS MINIMUS, *Red.*

Area (4).

Aliens. These two species are recorded as found in Sir H. Bunbury's park, at Barton, Suffolk, "equally the outcasts of gardens." C. aureus has likewise been reported from some other provinces, as an occasional straggler. It is really remarkable that this latter species, so very much planted in gardens, so perfectly hardy, and so rapidly increasing, should not have become well established as a naturalized plant in England.

1071. NARCISSUS POETICUS, *Linn.*

Area (3 4 5 * * * * 10 * [12] * * 15).

Alien. It is to be regretted that the authors of our descriptive Floras should persist in still including this species among the native and really naturalized plants of Britain, instead of simply noticing it as an occasional straggler or planted species, not otherwise entitled to a place in the lists of British plants. In some of the reported habitats, probably, N. biflorus has been misnamed N. poeticus; and in one of them there is too much reason to believe that interested falsehood was the sole ground on which N. poeticus was recorded. Most weight would seem to have been attached to the habitat of Thorne Warren, in Kent, which is rendered more suspected by the occurrence also of double varieties of N. poeticus and biflorus, with Ornithogalum umbellatum, in the same locality.

1072. NARCISSUS BIFLORUS, *Curt.*

Area (1 2 3 * 5 6 7 8 9 10 11 * * 14).

Alien. Occurs in many places; though allowed to be only an introduced species, by almost all our botanical authorities, whose opinion would carry weight in the question. But to this there are some exceptions. Professor Henslow, Mr. T. H. Cooper, Mr. Lees, and "Mrs. Jones" (Welsh Botanology), appear the principal witnesses or advocates on the side of its nativity in this country.

1073. NARCISSUS PSEUDO-NARCISSUS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 (13 14 15 16).
South limit in Devon, Isle of Wight, Kent.
North limit in N. Lancaster, Durham, Northumberland?
Estimate of provinces 12. Estimate of counties 30.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Pratal. This appears to be truly native in numerous localities in England, although into many others it may have been originally introduced by garden-culture. In Scotland it must be deemed a very much distrusted species, in so far as aboriginal nativity is concerned. Whether 40 or 30 would be the better estimate for the number of counties in which it is truly wild, I do not feel well prepared to say. It is recorded from about 32 English counties, three Welsh, and eight Scottish; and it is probably native in 30 or upwards.

NARCISSI *Species.*

Aliens. Some other species of Narcissus have been reported by botanists, as more or less established locally. At a future day it may be found useful to have some reference to the records and authorities, as known at the present time. Their specific names are taken on trust, and in the absence of specimens in exemplification:—

"NARCISSUS CONSPICUA."—Mr. W. M. Chatterley communicated this to the Botanical Society of London, localized from "Muggeridge's farm-yard, beyond Banstead," in Surrey.

"NARCISSUS MOSCHATUS."—"Has been found wild in the adjoining parish of Meriden; and has been communicated to me by its discoverer, Miss Gresley, of that place." (Rev. W. T. Bree, of Allesley, Warwickshire, in Mag. Nat. Hist. viii. 118). But by a second notice in the same Magazine, it would seem that some mistake had occurred, the plant being possibly a whitish variety of N. Pseudo-Narcissus. (See Mag. Nat. Hist. ix. 494).

"NARCISSUS INCOMPARABILIS."—"Grows in the Little Park at Margam, and Mrs. D. Llewelyn has shown me good ground to believe that it has continued to do so for at least two centuries." (Dillwyn's Materials for a Fauna and Flora of Swansea, p. 36).

"NARCISSUS MINOR."—"Thrives on the rocks below the old castle at Penrice, and no trace can be obtained of the time when it was planted." (Dillwyn's Materials, &c., p. 36).

"NARCISSUS (AJAX) LOBULARIS."—"I have now for some years cultivated in the garden a very handsome daffodil, which was found wild by a friend of mine, near Tenby, in Pembrokeshire, and is quite distinct from any other British Narcissus that I am acquainted with. The late Mr. Haworth, to whom I sent it in 1830, considered it quite new to Britain, and recorded it in the 'Philosophical Magazine' under the name of Ajax lobularis." (Rev. W. T. Bree, in Phytologist, i. 63).

1074. GALANTHUS NIVALIS, *Linn.*

Area (1 5 3 4 5 6 7 8 9 10 11 12 13 14 15).

Alien? Some difference of opinion exists respecting the propriety of considering this plant native or introduced. Babington describes it in his Manual as an undisputed native. Henslow marks it as "possibly introduced by the agency of man." Hooker marks it as having been "naturalized through the agency of man." I have myself never seen it in any locality which was not decidedly suspicious, and to be distrusted in the case of a plant which has been so long and so generally in cultivation, and is so persistent in places where it is once planted. Most writers who mention localities for it, do so with expressions of distrust. But there are some exceptions to this latter view, of which it may not be deemed too tedious to cite examples. Mr. Edwin Lees (a man of naturally superior ability, although undertaking too many subjects of study for strict accuracy in any of them) says of the snowdrop, that "it certainly occupies the virgin turf in a glen at the base of the Herefordshire Beacon, near Little Malvern: it is, however, possible it might have been planted by the monks of Little Malvern Priory." And in his recent publication on 'The Botany of the Malvern Hills,' he advocates the nativity of the plant more unconditionally. The late Mr. J. E. Bowman wrote, with reference to the snowdrop in the county of Denbigh, "we have it in abundance in meadows and near streams, near Wrexham, where it is much more likely to be indigenous than to have been introduced." Mr. Roberts Leyland finds the Galanthus in "Cromwell Bottom Wood, two miles from Halifax, in the greatest profusion, where it has grown time immemorial." Fries does

not allow the snowdrop to be native in any part of Scandinavia, including Denmark.

1075. LEUCOJUM ÆSTIVUM, *Linn.*

Area * 2 3 4 [5 * * * * * 11 12].
South limit in Dorset, Kent, Berks.
North limit in Oxon, Bucks, Middlesex ? Suffolk.
Estimate of provinces 3. Estimate of counties 6.
Latitude 50—53. Germanic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Thames or Channel.
Ascends to 50 yards, less or more, in same provinces.
Range of mean annual temperature 51—49.

Denizen. Pratal. There appears to be rather more probable ground for holding this plant a native in the south-east of England, than in the case of the Galanthus. Hooker rejects the claims of both, regarding them equally as introduced plants. Babington marks the Leucojum with the sign of "possibly introduced;" and Henslow allows it to pass for a true native. Thus, the two latter botanists may be said to hold converse views of the Galanthus and Leucojum; that species which the one of them holds to be native, the other holding as possibly introduced, in each case. Other botanists mention some of the localities of the Leucojum in terms which appear to show that it is either native or long and fully established. In the English Flora, on authority of Curtis, it is said to be "undoubtedly wild" close by the Thames between Greenwich and Woolwich. In the Magazine of Zoology and Botany, vol. i. p. 499, the late Mr. D. Cooper wrote that "a meadow of this beautiful plant is to be seen at the bend of the river Thames, directly opposite to the Plough

Tavern, Blackwall." Under "Buckinghamshire" in Turner and Dillwyn's Guide, Mr. Gotobed reports this plant "in a moist meadow at Upton, remembered for fifty years by the present tenant of the farm; also in a peat field near Dorney." And in the same publication Mrs. Cobbold states that it is a troublesome weed in pastures at Little Stonham. Two or three botanists have reported it in Dorset; whether really native, I am not prepared to say. It was formerly found by the Avon, near Stratford, and possibly exists there still. L. æstivum is considered native, though local, in Denmark.

LEUCOJUM VERNUM is stated to have been discovered near Bicester; with a reference, for particulars, to the Gardener's Magazine of July, 1836, p. 371.

1076. LILIUM MARTAGON, *Linn.*

Area (2 3 * * * * 8 * 10 * * * * 15).

Alien. Reported as having been established for many years in some few spots of the Channel and Thames provinces, chiefly in the county of Surrey. It has occurred very locally and sparingly in other more northerly provinces of England, doubtless there originating from gardens; and probably so in the more southerly provinces. (See New Botanist's Guide, Eng. Bot. Sup. 2799, Mag. Nat. Hist. iii. 153, Phytologist, i. 62, and iii. 817).

1077. TULIPA SYLVESTRIS, *Linn.*

Area (1 2 3 4 5 * * 8 * 10 11 * 13 14 15).

Alien? While Hooker places this among the alien species, Henslow and Babington mark it only as "possibly

introduced " to Britain. It may be indigenous in England, though the presumption seems more against than in favour of this view. In Scotland, the localities are yet more to be suspected of an artificial or human origin. For example, it has long grown in a wood near Brechin Castle, in Forfarshire; but the spot is stated (Phytol. iii. 477, and Flo. Forf.) to be near the stables which were erected on the site of the old garden, nearly half a century ago. In a letter from Mr. George Lawson, that gentleman writes,—" I saw the Brechin station in July, 1848. Brechin Castle woods form a perfect garden of foreign plants, and I could not suppose that the Tulip was other than the remains of cultivation. It grew with Meconopsis cambrica, Rumex alpinus, Papaver somniferum (on loose soil), Hesperis matronalis, Mimulus luteus, Viola odorata, Doronicum Pardalianches, &c." Fries admits it among the natives of Scandinavia, where it occurs quite locally.

1078. FRITILLARIA MELEAGRIS, *Linn.*

Area 1 2 3 4 5 * * 8 * [10 * 12].
South limit in Somerset, Dorset, Hants, Sussex.
North limit in Norfolk, Leicester, Stafford.
Estimate of provinces 6. Estimate of counties 15.
Latitude 50—53. English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Channel or Thames.
Ascends to 100 yards, less or more, in England.
Range of mean annual temperature 50—49.

Native? Pratal. While some of the recorded localities for this plant read very suspiciously, in others it appears to be truly an indigenous species. In addition to the counties above mentioned, my compilation of notes and

records includes also those of Surrey, Berks, Oxford, Bucks, Middlesex, Herts, Suffolk, Cambridge, Bedford, Gloucester, Warwick, Salop, York and Cumberland; some of these being false or erroneous, as Cumberland and Cambridge; and to others the species has apparently been introduced by cultivation in gardens, as Salop and York.

1079. ALLIUM AMPELOPRASUM, *Linn.*
1080. ALLIUM BABINGTONII, *Borr.*

Area (1) [12 * * 15].

Alien in England. Sarnian. Hibernian. The former of these two plants has been long on record as an inhabitant of the island called Steep Holmes, at the mouth of the Severn; where it is stated by Mr. Borrer to be "the remains of ancient cultivation." The latter is figured in English Botany, Supplement, 2906, from the neighbourhood of Grade and Ruan Minor, where it occurs "in great luxuriance, but only in or near old orchards, though we could not learn that the inhabitants make any use of it. In Ireland it is probably a true native." Mr. Hunt has sent me the A. Ampeloprasum from St. Michael's, Azores, where also occur many of the plants of Ireland and the South-west of England. The same species is indigenous in Guernsey, according to Babington. Mr. Andrews considers the Irish A. Babingtonii not distinct, as a species, from A. Ampeloprasum. The latter has been reported from Cumberland (Hutchinson) and Forfarshire (G. Don), where some other species may likely have been mistaken for it.

1081. ALLIUM ARENARIUM, *Linn.*
ALLIUM SCORODOPRASUM, *Linn.*

Area [* 2 * * 5] * * * 9 10 11 12 13 14 15.
South limit in York, Lancaster. [Worcester?]
North limit in Forfar? Perth, Fife, Kirkcudbright.
Estimate of provinces 7. Estimate of counties 12.
Latitude 53—57. Scottish type of distribution.
Agrarian region. Midagrarian zone.
Descends to the coast level, in Tyne province.
Ascends to 150 or 200 yards, in Humber.
Range of mean annual temperature 48—46.

Native. Pratal, Sylvestral. Besides the counties above mentioned, this species is recorded for those of Berwick, Northumberland, Durham, Westmoreland, and Cumberland. Introduced to Moray, according to Gordon. Mr. Lees reported it in Worcestershire (N. B. G.); and Dr. Salter enumerates it as growing within 30, though not within 16, miles from Poole, in Dorset. These two habitats will require verification, before they can be taken into account for the area, &c. Mr. Babington has adopted the name of A. Scorodoprasum; but the species is more familiar to British botanists under that of A. arenarium, which seems equally correct, if the Linnean specimens can be relied upon. Fries, however, in the Summa Vegetabilium, keeps the two distinct, and gives exactly the same distribution for each of them in Scandinavia. Hartman also describes them as two species; so that there would seem to be still some ambiguity between the British and Swedish plants.

1082. ALLIUM OLERACEUM, *Linn.*
1082, b. ALLIUM CARINATUM, *Sm.*

Area 1 2 3 4 5 * * 8 * 10 11 12 * [14] 15.
South limit in Somerset, Hants, Sussex, Kent.
North limit in Forfar, Fife, Cumberland.
Estimate of provinces 9. Estimate of counties 20.
Latitude 50—57. English (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in Channel.
Ascends to 200 yards, in Humber.
Range of mean annual temperature 50—46.

Native. Rupestral, Pratal, &c. Considerable uncertainty is felt respecting the distribution of this plant. It is doubtful whether one or two species are comprehended under the above two names; and it is doubtful, also, whether some of the recorded localities do not really belong to A. vineale or other species; while to other places this may have been introduced. Though enumerated in the Flora of Berwick, the localities are strictly within the province of Tyne, not in that of the East Lowlands; and though a specimen is said to have been found in the county of Edinburgh, it is not recognized as a plant of their circle by the Botanical Society of Edinburgh. Hence that province [14] is cut off from the area indicated. Too local to be referred to the British type; and yet neither so boreal nor so austral as to well justify its reference to the Scottish or English type. The true A. carinatum, of Linnæus, is said to be different from the A. carinatum of Smith and English botanists. Possibly attains the superagrarian zone.

1083. ALLIUM VINEALE, *Linn.*

Area 1 2 3 4 5 6 7 8 * 10 11 * 13 14 15.
South limit in Devon, Isle of Wight, Kent.
North limit in Aberdeen, Forfar, Fife, Lanark.
Estimate of provinces 14. Estimate of counties 50.
Latitude 50—58. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Pratal, Rupestral. After A. ursinum this is doubtless the most frequent species of its genus in England; and there seems cause to suspect that some of its localities have been assigned erroneously to A. arenarium; others, perhaps, to A. oleraceum.

1084. ALLIUM SPHÆROCEPHALUM, *Linn.*

Area 1 or 5.
South limit in Somerset or Gloucester.
North limit in the same county.
Estimate of provinces 1. Estimate of counties 1.
Latitude 51—52. Local (Atl.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, or nearly so.
Ascends to 50 yards, less or more.
Range of mean annual temperature, say 50—49.

Native. Rupestral? Found by Mr. Stephens, on St. Vincent's Rocks, near Bristol, on the steep declivities of the cliffs; but whether on the Somerset or the Gloucester

side of the river, and at what elevation, has not been clearly explained. It grows also on the sands of the coast in Jersey.

1085. ALLIUM SCHŒNOPRASUM, *Linn.*
1085, b. ALLIUM SIBIRICUM, *E. B. S.*

Area 1 * * * * * * [8 * 10 11] 12 (13) [14 * 16.]
South limit in Cornwall.
North limit in Northumberland.
Estimate of provinces 2. Estimate of counties 2.
Latitude 50—56. Local type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 yards, more or less.
Range of mean annual temperature 52—47.

Native. Rupestral, &c. To be found certainly in Cornwall and Northumberland only; and possibly the A. Sibiricum, of the former county, may be distinct from the A. Schœnoprasum, the plant of Northumberland. The latter has also been reported from the counties of Derby (Dr. Howitt), York (Mr. Flintoff, in B. G.), North Lancashire (B. G., &c.), Westmoreland (Huds.), Lanark (near gardens; Flo. Lan.), Berwick (Dr. Parsons), and Argyle (Light. Scot.).

ALLIUM AMBIGUUM, *Sm.*

Area (3).

Alien. Has been found near Rochester, and on Eye Castle Hill, Suffolk, but has no just claims to be considered as a native. (Bab. Man.) The locality near Rochester, in

Kent, is more particularly described in Eng. Bot. Supp. 2803.

ALLIUM TRIQUETRUM, *Linn.*

Sarnian. Very abundant in the hedges all over the island of Guernsey (Rev. T. Salwey! C. C. Babington, in Phytologist, iii. 6).

1086. ALLIUM URSINUM, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Eastern Ross, Isle of Skye, Aberdeen.
Estimate of provinces 17. Estimate of counties 70.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—46.
Native. Sylvestral. Not a common plant when considered as belonging to the British type, to which its extended area seems properly to refer it.

1087. GAGEA LUTEA, *Ker.*

Area 1 [2] 3 4 5 * * 8 9 10 11 12 13 14 15.
South limit in Somerset, Oxford, Suffolk.
North limit in Moray, Forfar, Perth.
Estimate of provinces 12. Estimate of counties 20.
Latitude 51—58. Scottish type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in Ouse province.
Ascends to 100 or 200 yards, in North England.
Range of mean annual temperature 49—47.

Native. Sylvestral. An uncommon plant, particularly in the southern provinces. Its occurrence in North Somerset and Gloucester causes the provinces of the Peninsula and Severn, 1 and 5, to be given in the area. Salter enumerates the species among plants found within thirty miles from Poole, in the Channel province, which should be verified afresh, and the locality be more explicitly stated. Reported from a meadow near Godalming, in Surrey (Blackstone, in B. G.), where Mr. Salmon has not succeded in finding it. Also recorded in Oxford (Flo. Oxon, &c.), Suffolk (Mr. W. L. Notcutt), and various counties more northerly than those named.

1088. ORNITHOGALUM PYRENAICUM, *Linn.*

Area 1 2 3 4 5.
South limit in Somerset, Wilts, Sussex.
North limit in Salop ? Cambridge.
Estimate of provinces 5. Estimate of counties 7.
Latitude 50—53. English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Peninsula or Channel.
Ascends to 50 yards, less or more, in England.
Range of mean annual temperature 50—49.

Native. Sylvestral. A local plant, which has been further reported from Surrey, Middlesex, Bedford and Gloucester; though the two former of these four counties will require verification, equally with that of Salop.

1089. ORNITHOGALUM NUTANS, *Linn.*

Area (3 4 5 * 7 8 * 10 11).

Alien. Said to have become more or less fully established in the counties of Surrey, Suffolk, Norfolk, Bedford, Worcester, Hereford, Denbigh, Nottingham, Derby, York, and Durham.

1090. ORNITHOGALUM UMBELLATUM, *Linn.*

Area (1 2 3 4 5 6 7 8 9 10 * 12 13 14 15 16).

Alien. Reported from numerous counties, but generally allowed to be an introduced species. As an example of the tendency of this species to establish itself, I may mention that, not having it in my garden, I planted a bulb from a dried specimen, which appeared still to have some life in it, and which revived. From this single bulb a large cluster of plants was formed in a few years; others springing up as weeds, here and there in the garden, apparently from the dispersion of their seeds; so that, if it were allowed, the species would soon become thoroughly established and reproductive in the locality.

1091. SCILLA VERNA, *Linn.*

Area 1 [2] * * * 6 7 * * * 11 12 13 14 15 16 17 18.
South limit in Cornwall, Devon? Isle of Wight?
North limit in Shetland, Orkney, Caithness.
Estimate of provinces 12. Estimate of counties 25.
Latitude 50—61. Atlantic type of distribution.

A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 300 yards, in Orkney (Gillies).
Range of mean annual temperature 52—43.

Native. Sub-littoral, Glareal. This is a maritime (or coast) plant, although not strictly a littoral (or shore) species. Its distribution is somewhat peculiar, in reference to our geographic types; clearly coming nearest to the Atlantic; but, unlike most of the species of that type, having a western and northern, more than a western and southern tendency. It occurs at intervals, and in abundance, along the western coast, from Cornwall to Argyle; also on the northern coasts of Sutherland and Caithness, in Orkney and Shetland, and northward to Faroe. On the eastern side of Scotland, we find it in Moray, Aberdeen and Berwick; as well as very locally on the coast of Northumberland. But thence round to Cornwall again, it remains unrecorded on the eastern coast, and only very dubiously recorded on the southern coast, in the Isle of Wight and Devon. Thus, while the distribution is oceanic, it passes into the boreal rather than the austral type. The species is absent from Scandinavia, unless Norway be an exception to this, which appears to be yet uncertain.

1092. Scilla autumnalis, *Linn.*

Area 1 2 3 * 5 * [7 * * * * 12].
South limit in Cornwall, Devon, Isle of Wight, Kent.
North limit in Gloucester, Somerset, Surrey.
Estimate of provinces 4. Estimate of counties 8.
Latitude 50—52. English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.

Ascends to 50 yards, less or more.

Range of mean annual temperature 52—49.

Native. Glareal. There seems no doubt respecting the existence of this species in the seven counties above mentioned, from five of which there are specimens in my herbarium. In addition, the species has been recorded from Middlesex, where it is supposed to have become extinct; from Stafford, which is probably erroneous; from Caernarvon, which may be correct, but will require modern verification; from the Isle of Man, incorrectly, through an accidental inadvertence in checking a list.

Scilla bifolia, *Linn.*

Area [?].

Incognit. Said to have been received by Mr. Sims of Norwich, "from the west of England." Hudson probably gives the clue to explain the probable error, in writing thus of Scilla verna:—"Hæc planta ex Scotia sub nomine Scillæ bifoliæ accepi quæ nec Scotiæ nec Angliæ indigena est."

1093. Hyacinthus nonscriptus, *Linn.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Hebrides, Ross, ——— ?

Estimate of provinces 18. Estimate of counties 80.

Latitude 50—58. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 500 or 600 yards, in Lake province.

Range of mean annual temperature 52—43.

Native. Sylvestral. Very generally distributed in Britain, though possibly absent from some of the most northern counties and isles. Occurs in Shetland, but supposed by Edmondston to have been introduced thither. Not mentioned in the lists for Orkney. Nor did I observe it in Sutherland or Caithness, or anywhere among the Highland mountains; perhaps because it is an early flowerer. Gordon marks it as "very common" in Moray, and it is enumerated in all the county floras and complete lists of species, drawn up for considerable tracts, to the southwards of Moray. Balfour and Babington (late in the summer) observed it in the Hebrides, but only in Harris.

1094. Muscari racemosum, *Mill.*

Area (2 3 4).

Alien. Said to occur in Dorset, Surrey, Berks, Herts, Suffolk, Norfolk, and Cambridge. Hooker and Henslow deem it introduced; Babington marks it as "possibly introduced, but now having the appearance of being a true native." It is said to cover some acres of ground near Pakenham, in Suffolk; and this seems to be the principal, if not the only passable, claim towards holding it indigenous.

1095. Anthericum serotinum, *Linn.*

Area * * * * * * 7.

South limit in Caernarvon.

North limit in the same county.

Estimate of provinces 1. Estimate of counties 1.

Latitude 53—54. Local type of distribution.
Arctic region. Inferarctic zone.
Descends to 700 yards, less or more ?
Ascends to 800 yards, less or more ?
Range of mean annual temperature, say 41—40.

Native. Rupestral. Very local; being limited to the Snowdonian range of mountains, in Caernarvonshire; nor is it clear that it now exists in more than one spot, the chasm of Twll ddu, which I roughly estimate at some 700 yards of elevation, without knowing the precise locality of the plant.

1095* SIMETHIS BICOLOR, *Kunth.*

Area * 2.
South limit in Dorset.
North limit in the same county.
Estimate of provinces 1. Estimate of counties 1.
Latitude 50—51. Local (Atl.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to ——— ?
Ascends to ——— ? (Near the coast level.)
Range of mean annual temperature, say 51.

Native ? Ericetal. Extremely local; having been discovered by Miss Charlotte Wilkins, in 1847, growing in small quantity, about two miles distant from Bourne, on what was once part of Poole Heath, but is now a plantation of firs, chiefly of Pinus maritima (E. B. S. 2952; Phytologist, iii. 260). There would seem to be no grounds for supposing it an introduced plant, and none to be adduced against its probable nativity, except the very restricted space occupied by it, at least so far as hitherto ascertained. The presumption in favour of its English nativity is

strengthened by its known habitat near the opposite coast of France, and particularly by its subsequent discovery in Ireland.

† YUCCA GLORIOSA, *Linn.*

Area [6].

Incognit. Although there is no reason for enumerating this American plant among those of Britain, except the accidental growth of a single example on the coast of South Wales, the circumstance of its appearance there seems deserving of record, as a remarkable fact bearing on the introduction of foreign species into other countries than their own. Mr. Dillwyn thus records the circumstance in his 'Materials for a Fauna and Flora of Swansea:'—"On the sandy sea shore, opposite the Race-course on Crumllyn Burrows, and more than a mile from any sort of house or garden, Mr. L. L. Dillwyn, in 1839, found a thriving young plant of Yucca gloriosa, and it had all the appearance of having arisen from a seed which the tide had cast there. Notwithstanding its exposed situation, and the looseness of the soil, this native of Carolina was not materially injured by the unusually severe winter of 1840-1; and Mr. Moggridge informs me that for two or three years it continued to thrive, till it was destroyed by a heap of shingle, which a violent storm and high tide threw over it."

1096. ASPARAGUS OFFICINALIS, *Linn.*

Area 1 2 (3 4) 5 6 7 8 (9 * * * * 14).

South limit in Cornwall, Isle of Wight, Kent?

North limit in Anglesea, Lincoln?

Estimate of provinces 6. Estimate of counties 10.
Latitude 50—54. English (?) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends, at the coast level, to Trent province.
Range of mean annual temperature 52—49.

Native. Littoral. Chiefly found on the coasts of the western counties, at the present time; the eastern counties, as recorded in books upon old authority, remaining unverified by existing botanists. Thus, going by recent authority only, the type should be set down as Atlantic; but trusting to the older authors and reporters, it must be pronounced as English, habitats having been recorded in several of the eastern counties; namely, Kent (Huds.), Essex (Ray), Suffolk or Norfolk (Woodward), Lincoln (Banks), and Haddington (Maughan). I have met with it in several spots in North Surrey, but no doubt originating from cultivation; as I believe to be the case on the sands of the Lancashire coast, about Bootle. It has been said that the Asparagus of the gardens differs specifically from the really native plant of the coast; but I know not by what characters to distinguish them in a satisfactory manner.

1097. RUSCUS ACULEATUS, *Linn.*

Area 1 2 3 4 * 6 * 8 * 10 11 * (13 * 15 16).
South limit in Cornwall, Isle of Wight, Kent.
North limit in Durham, Ayr? Lanark? Islay?
Estimate of provinces 8. Estimate of counties 20.
Latitude 50—55 (56). English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 52—47.

Native. Ericetal, Sylvestral. Indigenous in most of the counties of the four first provinces of England, Peninsula to Ouse. Unknown in that of the Severn. Ascertained in the single county of Glamorgan only in the Welch provinces. More northward, it has been reported to grow in Leicester (Bot. Charn.), Nottingham (Deering), York (Winch, in N. B. G.), Durham (Flo. N. D.), Ayr (Hook. Brit. Flo.), Lanark (Flo. Glott.), Fife (Mr. G. Lawson), Moray (Coll. Mor.), Islay (Professor Balfour). Difficult to decide where it is native, and where it has been introduced. Doubtful as a native of Scotland. The authors of the Floras of York and Nottingham appear not to have verified its existence in their counties. Winch gives it as an indigenous plant of Durham; indicating two localities on borrowed authority, not of high value in a question of botanical nativity. Perhaps the comital census may eventually reach to 25, though I do not venture to carry the estimate above 20 on existing records and knowledge.

1098. CONVALLARIA BIFOLIA, *Linn.*

Area [3 4 * * * * 9 * 11].

Incognit or Alien. This was lately announced to British botanists as having been discovered wild or naturalized in the woods at Howick, Northumberland. Subsequently, the alleged habitat was visited by Mr. Borrer, who reported in the Phytologist, ii. 432, that "the plant has been completely extirpated at Howick. The spot was close by Earl Grey's garden." It is very much to be wished that real botanists would not only discountenance, but also treat with public reprobation, every attempt to pass off the

accidental finding of stray garden plants as a discovery and addition to British botany. And it is equally to be wished that Mr. Borrer would more frequently afford us the benefit of his own experience and judgment, openly and boldly expressed, after visiting the spot of any announced discovery; which, it is understood, he so regularly makes a point of doing. To the store of practical experience that must have been thus acquired, Mr. Borrer adds also other important qualifications, which altogether ought to give to his opinion more value and weight than could be accorded to the opinions of any other British botanist, in reference to questions bearing on the nativity of newly-discovered plants, and the genuine character of localities for local or novel species. The announcement of Convallaria bifolia being found in Northumberland, for which there seemed no geographic improbability, resuscitated the overlooked fact of its occurrence in Lancashire, "in Dingley Wood, six miles from Preston, in Aulderness, and in Harwood, near Blackburn, likewise," having been recorded long since by Gerarde. And Mr. Edward Edwards afterwards stated in the Phytologist, i. 579, that the same species had been reported indigenous in the woods at Hampstead, in Middlesex, in Park's 'History of Hampstead;' and that he had himself, "in 1835, detected several patches of the plant, apparently well established and really wild, under the shade of fir trees, growing near the highest parts of Caen Wood, between Hampstead and Highgate;" likewise, that he had found it, a year or two previously, under "fir trees in Aspley Wood, Bedfordshire." The only doubt which arises in respect to these two last-mentioned counties, is, that Mr. Edwards may possibly have mistaken some other plant for the Convallaria bifolia, and more particularly as he writes on the recollection of several years back.

1099. CONVALLARIA MAJALIS, *Linn.*

Area 1 2 3 4 5 * 7 8 9 10 11 12 (13 14) 15.
South limit in Somerset, Wilts, Surrey, Kent.
North limit in Moray, Forfar, Perth, Lanark ?
Estimate of provinces 12. Estimate of counties 30.
Latitude 50—58. Germanic (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in Peninsula or Thames.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 49—46.

Native. Sylvestral. Localities have been recorded for this species in forty counties; but in several of these counties it is either expressly stated, or impliedly admitted, to be of suspected origin; while the presumption seems decidedly in favour of its aboriginal nativity in about thirty of them. The Rev. G. Gordon and Mr. W. A. Stables deem it clearly indigenous in Moray; and the woods of Kent appear quite admissable as native localities. In various other countries, between these extremities of its area, it is evidently wild and plentiful. In the Peninsula and Channel provinces it would seem to be quite local, and indigenous only in the counties of Somerset and Wilts. Mr. Bowman reported it in Denbighshire, which is the only county of Wales hitherto placed on record for this species. It occurs sparingly, but apparently indigenous, in one locality in the West of Cheshire; and is reported from several spots within the Lake province. The localities in Renfrew and Lanark are to be cautiously received as indigenous habitats, being places "where many a garden flower grows wild" by the original aid of human beautifiers. The distribution does not accord very precisely with any

single type, being intermediate between the British and Germanic; that is to say, too restricted and eastern for the former, rather too boreal and western for the latter.

1100. CONVALLARIA VERTICILLATA, *Linn.*

Area * * [3] * * * * * * * 11 * * * 15.
South limit in Northumberland.
North limit in Perth, Forfar?
Estimate of provinces 2. Estimate of counties 3.
Latitude 55—57. Local (Scot.) type of distribution.
Agrarian region. Superagrarian (?) zone.
Descends to ——— ?
Ascends to 200 yards, less or more.
Range of mean annual temperature, say 47—46.

Native. Sylvestral. A very local plant in Britain. Mr. Storey has favored me with a specimen, collected by Mr. Makepeace, near Bellingham, in Northumberland. It had been long known to occur locally, a few miles from Dunkeld, in Perthshire; but whether in one spot only, or in two or three distinct localities in that county, I cannot clearly understand from the variously worded reports of its collectors. In the Flora of Forfarshire, a habitat is mentioned with the suspicious connexion of a "purple beech" and adjacent garden. Included in D. Cooper's list of Metropolitan Plants; erroneously so, of course.

1101. CONVALLARIA MULTIFLORA, *Linn.*

Area 1 2 3 4 5 * * 8 9 10 11 12 13 * (15 16).
South limit in Somerset, Dorset, Hants, Kent.
North limit in Northumberland, Cumberland? Lanark?

Estimate of provinces 13. Estimate of counties 20.
Latitude 50—56. English (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in Channel or Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 50—47.

Native. Sylvestral. Recorded from about thirty counties; though in suspected places only in several of them. I feel insufficiently prepared to distinguish between the really native and the humanly made localities, in a satisfactory manner. The type of distribution is rendered doubtful, also, by this uncertainty; and it may be as near the Eastern or Germanic as the strictly English.

1102. CONVALLARIA POLYGONATUM, *Linn.*

Area 1 2 3 [4] 5 [6] * * * 10 11 12.
South limit in Somerset, Dorset? Hants, Kent?
North limit in York, Northumberland. Westmoreland?
Estimate of provinces 7. Estimate of counties 10.
Latitude 51—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends nearly to the coast level, in Peninsula.
Ascends to 200 yards, more or less, in Humber.
Range of mean annual temperature 49—46.

Native. Sylvestral, Rupestral. A scarce plant, which has become extinct in one or more of its localities, and has been erroneously reported from others. Records of it exist for the counties of Somerset (Mr. W. Christy!), Dorset (16—30 miles from Poole; Salter's Cat.), Wilts (Flo. Bath. Sup.), Hants (Mr. J. Woods, in B. G.), Kent (E. F.), Suffolk and Norfolk (erroneously), Gloucester (Mr. Edwin Lees, &c.), Monmouth (Miss Harvey), Pembroke (B. G.),

York (Mr. John Tatham!), Northumberland (Mr. Embleton!), Westmoreland (Annals of Kendal), Cumberland (Hutton, in B. G.—worthless authority). From these records, we may consider that the provinces of the Peninsula, Channel, Severn, Humber, and Tyne are truly reported for the present species. Those of the Thames and Lakes are now not free from suspicion. The province of Ouse would seem to be wholly erroneous; C. multiflora being the species really found there, and misnamed C. Polygonatum. The present species has very recently been rediscovered in the province of Tyne, by the members of the Berwickshire Naturalists' Club.

1103. PARIS QUADRIFOLIA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15.
South limit in Somerset, Dorset, Hants, Kent.
North limit in Moray, Aberdeen, Renfrew.
Estimate of provinces 15. Estimate of counties 50.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 50—47.

Native. Sylvestral. Rather partial and uncommon, when considered as a plant referred to the British type of distribution; but still, perhaps, better associated with the plants of that general type, than with those of the English or Germanic. It appears to be more of an eastern than a western plant; but it differs from the true Germanic type by not having any decided prevalence in the southern provinces, as compared with the middle and northern, the most northern being excepted.

1104. TAMUS COMMUNIS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Northumberland, Westmoreland.
Estimate of provinces 12. Estimate of counties 50.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Septal, Sylvestral. Rather peculiarly distributed, in its total absence from Scotland, while it probably occurs in nearly every English county. I am not prepared to cite authorities for the Tamus in any of the following counties; namely, Berks, Bucks, Northampton, Cardigan, Radnor, Montgomery, Merioneth, Flint, Lincoln, Cumberland, Isle of Man. Deducting these eleven from the fifty-two English counties (the Isle of Man being reckoned as a county of itself, and Rutland not so) we have forty-one only for the number of those which have been ascertained to produce the Tamus. But as there are strong presumptions that it may be found in several among the eleven counties above enumerated, I prefer to fix the comital estimate at 50, which may be slightly too high, instead of at 40, which would certainly be too low.

1105. COLCHICUM AUTUMNALE, *Linn.*

Area 1 2 3 4 5 * 7 8 9 10 11 12 * * (15).
South limit in Somerset, Dorset, Hants, Surrey.

North limit in Westmoreland, Northumberland. (Fife?)
Estimate of provinces 11. Estimate of counties 25.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends nearly to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 50—47.

Native. Pratal. An infrequent plant, if considered with reference to Britain generally, or even to England; yet very abundant in certain localities. I hesitate to take the only Scottish locality into the area, &c., until verified; which, so far as I am aware, has not been done since the time of Lightfoot. Being known already in 25 counties, the Colchicum may be found to occur in some others, and thus eventually warrant the next higher step in the estimated census, that of 30.

1106. TOFIELDIA PALUSTRIS, *Huds.*

Area * * * * * * * * * 10 11 * * * 15 16 17.
South limit in York, Durham.
North limit in Sutherland, Ross.
Estimate of provinces 5. Estimate of counties 12.
Latitude 54—59. Highland type of distribution.
A. A. regions. Superagrarian—Midarctic zones.
Descends to 350 yards, in the East Highlands.
Ascends to 800 or 850 yards, in same province.
Range of mean annual temperature 43—38.

Native. Uliginal. This plant constitutes one of the transition links between our Highland and Scottish, or alpine and boreal, types of distribution. While it affects the mountainous tracts almost exclusively, its chief prevalence is found about and below the middle altitudes, from

500 to 700 yards, in the Highland provinces; descending thence occasionally within the limits of cereal cultivation.

1107. HYDROCHARIS MORSUS-RANÆ, *Linn.*

Area 1 2 3 4 5 6 * 8 9 10 11 * * [14].
South limit in Devon, Dorset, Sussex, Kent.
North limit in Northumberland, York, Chester.
Estimate of provinces 11. Estimate of counties 30.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 yards, more or less, in England.
Range of mean annual temperature 51—47.
Native. Lacustral. As this species occurs in the counties of Caermarthen, Salop, and Chester, there appears a probability of its existence also in one or more of the counties of North Wales, sufficient to warrant the addition of that province to the estimated census.

1108. STRATIOTES ALOIDES, *Linn.*

Area * * (3) 4 * * * 8 9 10 (11 * * 14 15).
South limit in Suffolk, Northampton.
North limit in York, Lancaster.
Estimate of provinces 4. Estimate of counties 10.
Latitude 52—54. Germanic (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the province of Ouse.
Ascends to 100 yards, less or more, in England.
Range of mean annual temperature 49—47.
Native. Lacustral. Although now found in twice the

number of provinces mentioned in the estimate, it is supposed to have been introduced to four of them, and certainly known to have been originally planted by botanists in some of the localities, as in Surrey and Forfar. All the counties in which it is recorded to occur, and believed to be indigenous, are eastern, with the exceptions of Lancaster and Chester.

1108* ANACHARIS ALSINASTRUM, *Bab.*

Area * 2 * 4 5 * * 8 * * * * * 14.
South limit in Hants, Northampton, Stafford.
North limit in Edinburgh, Berwick.
Estimate of provinces — ? Estimate of counties — ?
Latitude 52 (50)—56. Uncertain type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, or nearly so.
Ascends to 100 yards, less or more, in East Lowlands.
Range of mean annual temperature 49—47.

Denizen. Lacustral. First announced as a British plant about the close of 1847, under name of Udora verticillata. Doubts were soon suggested respecting its nativity in Britain, from the circumstance of its being shortly afterwards observed in ponds, to which it might possibly, and even not improbably, have been introduced from America. Mr. Borrer found it in a pond in Leigh Park, near Havant, in the south-east of Hants, which is the most distrusted locality for it in England. Mr. Kirk (Phytol. iii. 389) observed it abundantly in the reservoirs at Watford Locks, "on the same line of canal as Foxton Locks," in Leicestershire. The reservoirs at Foxton Locks, near Market Harborough, were the original habitat, in which it was discovered by Miss Kirby, and subsequently gathered

plentifully by the Rev. A. Bloxam. Dr. James Mitchell has found it in the river Leen, and in the ditches of adjacent meadows, near Nottingham, "certainly not introduced." (Bot. Gaz. i. 27). Dr. G. Johnston appears to have been the first botanist who gathered the plant in this country, in the neighbourhood of Berwick-on-Tweed. (Proceedings Berw. Nat. Club; and Phytol. iii. 540). Mr. C. C. Babington informs me that it has been also found in Duddingston Lock, near Edinburgh, by Professor Balfour. In Staffordshire, according to Mr. Edwin Brown, in Phytologist, iii. 647.

1109. ALISMA PLANTAGO, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Ross, Aberdeen, Argyle.
Estimate of provinces 17. Estimate of counties 75.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Channel.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.
Native. Paludal. Abundant in England; and marked with the highest sign of frequency even so far north as the Moray Flora. Beyond the Caledonian Canal I have only one authority for its occurrence, that of the Rev. G. Gordon's checked list of Ross plants.

1110. ALISMA RANUNCULOIDES, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Cornwall, Isle of Wight, Kent.

North limit in Ross, Aberdeen, Argyle.
Estimate of provinces 17. Estimate of counties 70.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Paludal. Much less common than A. Plantago; but with a very similar provincial area, comital estimate, range of latitude, &c. Although their distribution in Britain is thus so nearly alike, yet in Scandinavia the difference between them is wide in this respect; A. Plantago being generally spread through Scandinavia, including Finland and Lapland, while A. ranunculoides is restricted to Denmark and the most southern portion of Sweden, according to the 'Summa Vegetabilium' of Fries.

1111. ALISMA NATANS, *Linn.*

Area * * [3] * 5 6 7 * * [10 * 12] 13.
South limit in Glamorgan, Salop, Merioneth.
North limit in Wigton, Anglesea, Caernarvon.
Estimate of provinces 4. Estimate of counties 8.
Latitude 51—55. Atlantic (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, or nearly so.
Ascends to 200 yards, less or more, in England.
Range of mean annual temperature 49—47.

Native. Lacustral. Peculiar and rather uncertain in its distribution. Disregarding its enumeration among the metropolitan plants, by Daniel Cooper, the counties in which it has been reported are those of Worcester (Mr. A. Aiken; Mr. E. Lees), Salop (Rev. A. Bloxam, &c.), He-

reford (Duncumbe, quoted in B. G.), Glamorgan (Mr. T. B. Flower; Mr. J. W. Gutch), Merioneth (E. F. and B. G.), Caernarvon (Mr. C. C. Babington, &c.), Anglesea (Davies, W. B.), York (Teesdale, in B. G.), Cumberland (B. G.), Wigton (Hook. Brit. Flo.). From these ten I have selected the six above mentioned, as being most probable or best supported; the other four will require verification by trustworthy observers. While the species is thus clearly one of western distribution, it cannot be quite accurately classed with the Atlantic or south-western group.

1112. ACTINOCARPUS DAMASONIUM, *Br.*

Area [1] 2 3 4 5.
South limit in Hants, Sussex, Kent?
North limit in Salop, Suffolk, Herts, Berks.
Estimate of provinces 4. Estimate of counties 10.
Latitude 50—53. Germanic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Channel?
Ascends to 100 yards, less or more, in England.
Range of mean annual temperature 51—49.

Native. Paludal. Peculiar to the three south-eastern provinces of Channel, Thames, and Ouse, with two alleged and very local exceptions; namely, at Ellesmere, in Shropshire, whence I possess a specimen gathered by the late estimable botanist, Mr. J. E. Bowman; also in Gulval Marsh, by Penzance, where it was reported by the Rev. W. T. Bree, but does not appear to have been found by any other botanist among the many who have visited that marsh.

1113. SAGITTARIA SAGITTIFOLIA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13.
South limit in Devon, Hants, Sussex, Kent.
North limit in Renfrew, Westmoreland, Durham.
Estimate of provinces 13. Estimate of counties 40.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 yards, more or less, in England.
Range of mean annual temperature 51—47. Peculiar to England, with the exception of the one Scottish habitat, near Paisley, in Renfrewshire, whence a specimen has been sent to me by Dr. J. D. Hooker. Probably more rare in the western provinces of England than in the eastern.

1114. BUTOMUS UMBELLATUS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * * (14 15).
South limit in Devon, Isle of Wight, Kent.
North limit in Durham, Lancaster, Anglesea.
Estimate of provinces 11. Estimate of counties 40.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 yards, more or less, in England.
Range of mean annual temperature 51—47.
Native. Paludal. Beyond the northern limit above indicated for this plant, it is said to occur at Howick, in Northumberland, in Duddingston Lock, by Edinburgh, and in Clunie Loch, which I suppose to be the one so named in Perthshire; but into these three counties the

Butomus is thought to have been introduced by botanists or others.

1115. TRIGLOCHIN MARITIMUM, *Linn.*

Area general?
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 50.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends, at the coast level, to the North Isles.
Range of mean annual temperature 52—45.

Native. Littoral. All around the coast of Britain; and not unlikely it might be found in somewhere about fifty-five counties, or midway between the steps of 50 and 60 in the census scale. Still, I am compelled to put even its provincial generality as interrogative or questionable, from not being prepared to quote any authority for it on the Lincolnshire coast, that is, for the province of Trent. This is one of the maritime plants which occurs far inland in the province of the Severn.

1116. TRIGLOCHIN PALUSTRE, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.

Ascends to 950 yards, in East Highlands.

Range of mean annual temperature 52—37.

Native. Paludal, Uliginal. I have seen this species up to 600 and 700 yards, in several places in Scotland, but only in two spots above 800 yards. It rather affects the shore, along with T. maritimum; and thus makes a sort of approach to the character of a littoral plant.

1117. SCHEUCHZERIA PALUSTRIS, *Linn.*

Area * * * * 5 * * 8 9 10 * * * * 15.

South limit in Salop, Notts, Chester, York.

North limit in Perth.

Estimate of provinces 5. Estimate of counties 6.

Latitude 52—57. Scottish type of distribution.

Agrarian region. Inferagrarian—Midagrarian zones.

Descends nearly to the coast level, in Severn.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 49—48.

Native. Paludal. This very local plant was long supposed to be restricted to a single English county; but its area and census have been gradually extended to the five provinces and counties above indicated, although still known only in very few separate localities. The Rev. George Pinder kindly sent me a specimen in illustration of his lately discovered locality in Cheshire; and I learn from the Rev. M. J. Berkeley, that it has also been found in the north of Nottinghamshire.

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